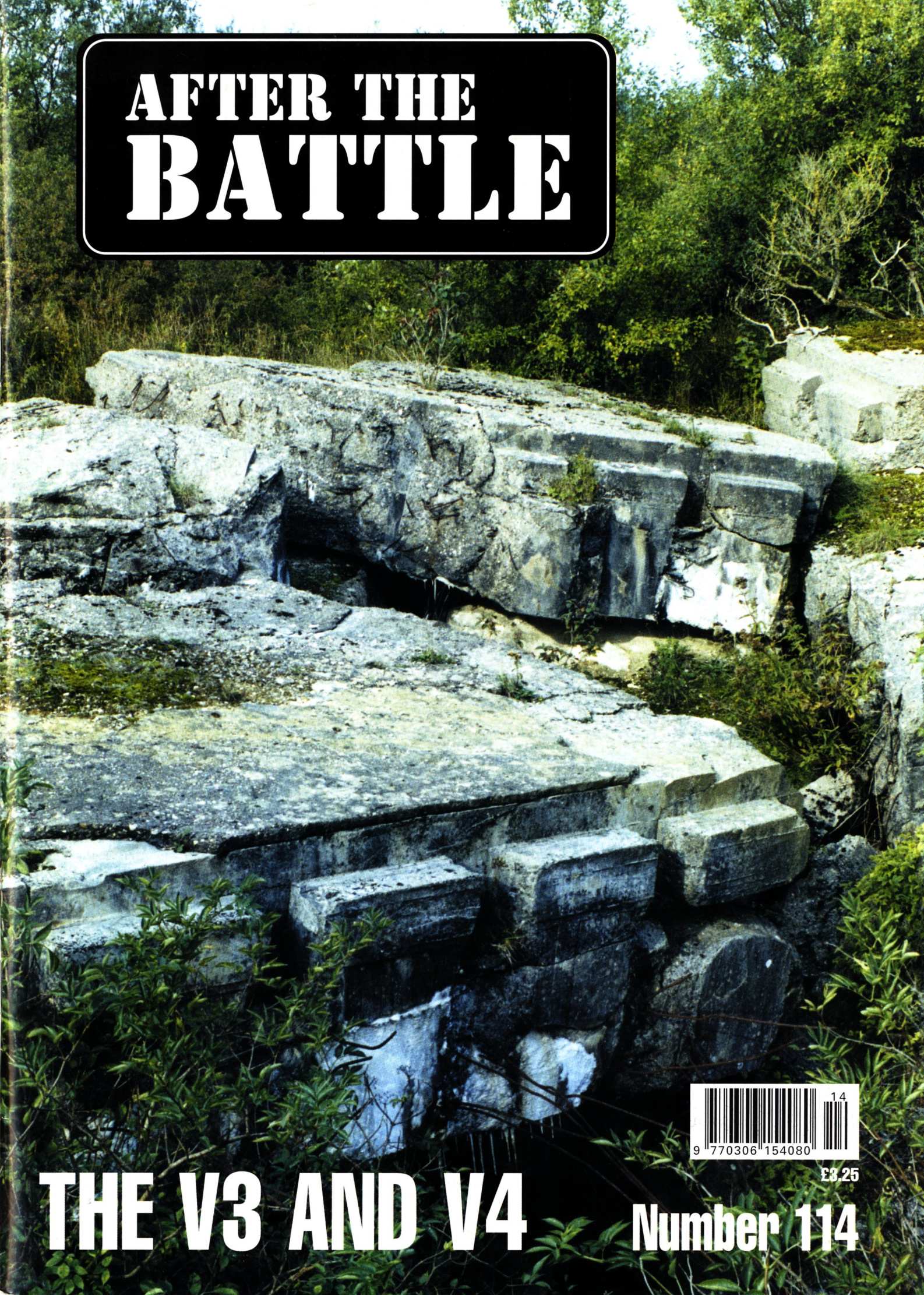
AFTER THE BATTLE



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Front cover: In 1945 the Royal Engineers blew up the five-metre-thick concrete slab that protected the V3 installation at Mimoyecques, near Calais. This picture shows a section of the broken firing slot above shaft No. III. (Jean Paul Pallud)

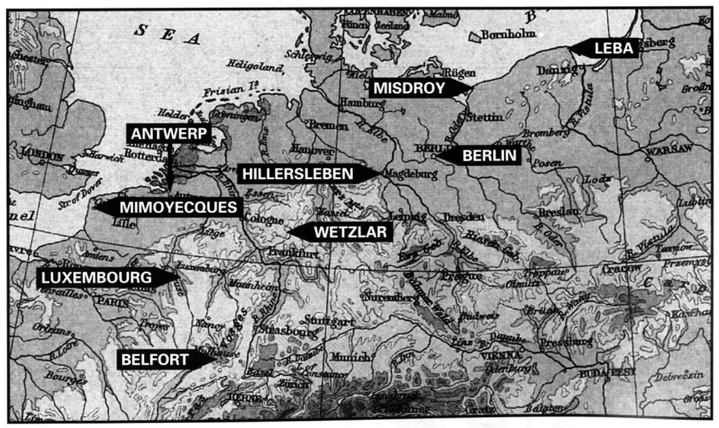
Centre pages: Pictured from the top of shaft No. V, with shaft IV in the centre and No. III beyond, M. Denis Simon of the staff of the Forteresse de Mimoyecques gives an idea of the scale of the project as he stands beside the remains of the slab. (Jean Paul Pallud)

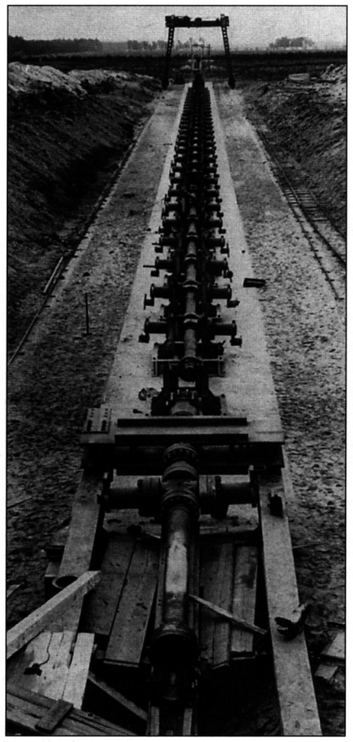
Back cover: The Shot at Dawn Memorial by Andy DeComyn at the National Memorial Arboretum at Arewas, Burton-on-Trent. (Paul Grover)

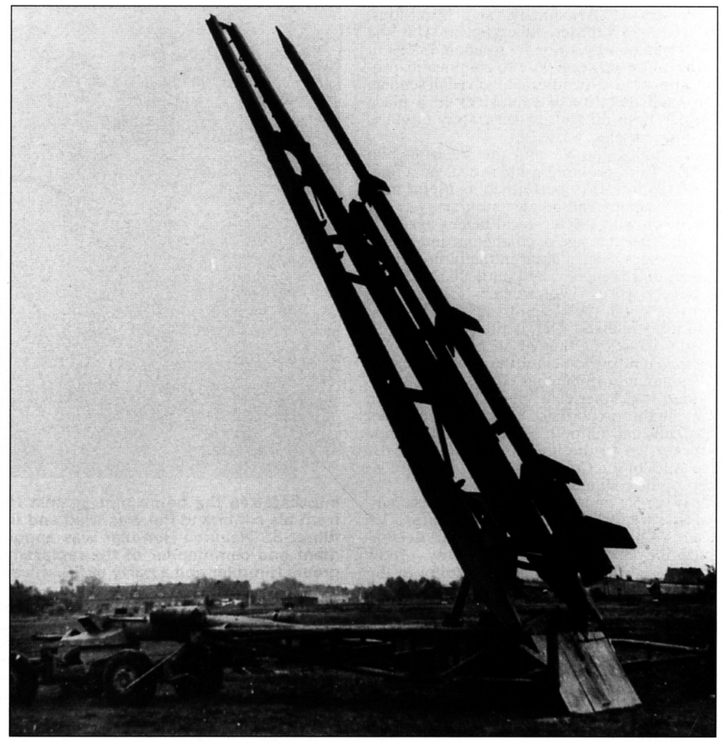
Acknowledgements: For help and support with the Secret Weapons: V3 and V4 story, the Editor would like to thank Jean Bader, Alain Feltes, Roland Gaul, Alvin Gilens, Artur Jakisz, Dr Josef Plucinski, Karsten Porezag, Peter Profe, Dr Peter Schenk, Monika Stranc and Peter Taghon. He also extends his appreciation to Dr Dieter Hölsken, author of the superb *V-missiles of the Third Reich*, Monogram Aviation Publication, and Roland Hautefeuille, author of *Constructions Spéciales*, the reference book about the German large constructions in the Pas-de-Calais and Normandy.

Photo Credits: IWM — Imperial War Museum, London; USNA — US National Archives.

The HDP (Hochdruckpumpe — high-pressure pump) multi-chambered cannon undoubtedly remains as one of the Third Reich's most bizarre weapons. Only four guns went to war and all were withdrawn in the nick of time as the Allied armies approached. They were later found lying dismantled in the yard of the Röchling company at Wetzlar. However, at the Hillersleben test range, the US Ninth Army captured two test cannons in relative good order, one comprising ten cross-sections, the other five. The latter was of a new type, with the lateral chambers angled at 45 degrees so that a plan view resembles a herring bone. This new arrangement was supposed to throw the gas produced by the lateral chambers forward, thus accelerating the shell at a greater velocity. *Above:* **This well-known picture taken at Hillersleben has contributed greatly in misleading historians into thinking that the operational HDP guns had firing chambers angled at 45 degrees: they did not, and all their lateral chambers lay at right-angles to the barrel. (IWM)**







Late in 1944, following the introduction of the V1 flying bombs and the V2 rockets, the Third Reich propagandists added to their arsenal the V3, the multi-chambered HDP gun *(left)*, **and the V4, the Rheinbote four-stage rocket** *(right)*. **(Bundesarchiv)**

THE SECRET WEAPONS: V3 AND V4

By Jean Paul Pallud

In June 1944, the propaganda machine of the Third Reich began to claim that it had new weapons of revenge in answer to the bombing attacks being carried out against Germany. Hailing them as V-Waffen (Vergeltungs-Waffen, retaliation weapons), the V1 flying bomb campaign started on June 12 and on the 27th the daily Wehrmacht bulletin for the first time reported strong harassing fire of V1s against London. The V2 rocket opened up against Paris and London on September 8 but it was not before November 11 that the Wehrmacht bulletin announced the entry of this second weapon.

Goebbels' propagandists had prepared the ground for a third V-Waffe, and a fourth, etc., all of them long-range weapons. They had given the name V3 to the multi-chambered HDP gun, certainly a new weapon, and V4 to the Rheinbote, a four-stage solid-fuel rocket. Then, to continue the V-Waffe series, would have come the V5 — actually the K5 280mm railway gun — and then the V6, the huge Gustav 800mm railway gun. The latter were not new weapons but it was hoped that both would have had their range greatly enlarged, up to about 150 kilometres, with new dart-like sub-projectiles.

Thousands of V1s and V2s were launched in the last months of the war and though they caused much damage in England (8,938 people killed and 24,504 wounded and over 31,000 houses destroyed) and Belgium (6,448 people killed and 22,524 wounded, most of them in Antwerp and its suburbs), they did little to change the course of the war. They even proved detrimental for Germany's already overstrained war economy, utilising a work-force and materials out of all proportion to the end result. In January 1944, Hans Kehrl, a departmental manager within the

Peenemünde, spring of 1944. Generalmajor Walter Dornberger (right) shows the test stand of the A4 rocket — the future V2 — to Generalfeldmarschall Wilhelm Keitel and Generaloberst Friedrich Fromm. (Deutsches Museum)

Ministry of Armaments and Munitions, advised the Minister, Albert Speer: 'This [the V2] is in no way a wonder weapon. In fact, it does not even seem wise to continue its production. The expenditure involved in sending a small quantity of explosives to a place which is so difficult to accurately target is simply a useless waste.'

Actually, the V1 and the V2 came too early. Both required a great deal of refinement before they performed as useful military weapons and greater accuracy was out of reach with the technical means available at the time, the age of computers and microelectronics being still far in the future. However, both weapons, and particularly the V2 rocket, were revolutionary trail-blazing designs and their significance cannot be underestimated. The United States built 1,200 copies of the V1 to enable the US Army and Navy to enter the missile age with a minimum of time and effort. The V2 provided the Americans and the Soviets with invaluable experience of large liquid-fuel rockets, and on both sides the Peenemünde rocket led to the intercontinental ballistic missiles of the Cold War and on to the rockets of the conquest of space.

If the V1 and the V2 were worthless militarily, what therefore of the immature V3 and V4 projects? Having attended a demonstration of the HDP at Misdroy (now Miedzyzdroje in Poland) on Wollin in the Pomeranian Bight on November 14, 1944, Generalmajor Walter Dornberger commented: 'Everyone present at the demonstration was agreed that the gun would have no effect whatever on the outcome of the war. But Hitler had ordered experimental work on it to be wound up immediately and demanded its employment at the front.' The following day, Dornberger was shown the firing of four Rheinbote units at Leba on the Pomeranian coast and he noted: 'We agreed that this weapon, in view of its performance and slight effect, would be absolutely useless. Yet Hitler and Kammler had ordered it to be employed operationally.'

By 1944 Dornberger was Beauftragter zbV Heer (Commissioner for Special Duties in the Army) in which capacity he was in charge of not only the development of the A4 (the V2), but also of the organisation and training of the operational units.

Actually, Hitler was not a strong supporter of these new weapons and throughout the war his technical interest was oriented more towards traditional weapons. As Speer wrote: 'He had no comprehension of developments such as radar, the construction of an atomic bomb, jet fighters or rockets'. It was the failure of the Luftwaffe to stop the Allied bombers from raiding Germany, and their usefulness as a means of retaliating against Britain, which made Hitler turn to the long-range weapons. He remained however irresolute and fickle and the long delays in development of the Fi-103 flying bomb (the V1) and the A4 rocket (the V2) throughout 1943 did not help to gain his confidence. From mid-1943, Hitler put his faith in the A4 as the ultimate weapon which would force Britain to her knees as he did not expect much of the Fi-103 because of its poor accuracy. Only by the end of June 1944, after the first two weeks of operations, did he finally show satisfaction with the flying bomb. Yet the only V-weapon which Hitler personally supported was the HDP because it corresponded with his own idea of a traditional long-range gun. As to the Rheinbote rocket, it seems possible that he was never even informed about its existence.

It was the SS which, in their claim to power, manoeuvred to take command of these supposed 'super weapons'. Following the attempt on his life on July 20, Hitler appointed Reichsführer-SS Heinrich Himmler as the successor to Generaloberst Friedrich Fromm (who was involved in this attempt) as Chef der Heeresrüstung und

Implicated in the bomb plot against Hitler on July 20, 1944, Fromm was removed from his command (he was tried and finally shot in March 1945) whereupon Reichsführer-SS Heinrich Himmler was appointed to replace him as chief of army equipment and commander of the replacement training army. Here Dornberger (centre) greets Himmler and a party of SS officers at Peenemünde. (Bundesarchiv)

Befehlshaber des Ersatzheeres (Chief of Army Equipment and Commander of the Replacement Training Army). On August 8, Himmler appointed SS-Gruppenführer Hans Kammler as his commissioner for the A4 programme and by the end of the month, a Division zV (zur Vergeltung — for retaliation) was created under his command for the control of operations.

In September, Kammler was granted responsibility in all matters of importance in the V2 programme and Dornberger, who was made Kammler's deputy, had to adapt to the SS taking over. In the months that followed, the SS progressively took control of the entire secret weapon programme, including the HDP. By the end of 1944, Kammler had pressed the HDP and the Rheinbote to the front and by January 1945, he had finally wrested command of V1 operations from the Luftwaffe. On February 7, he could claim that he alone 'was responsible to the Reichsführer-SS for development, testing and production of all long-range weapons and anti-aircraft devices for all military and civil matters'.

In August, Himmler appointed SS-Gruppenführer Hans Kammler as his commissioner (Sonderbevollmächtigter 2 or Sb 2 in short) for the A4 programme. Although Dornberger quickly adjusted to the SS taking over the V-weapon programme, it was not easy for him to work under Kammler: 'I found it impossible to go into anything thoroughly with him. He darted from one subject to another. He had no time for discussion or reflection. He made his decisions without due consideration. He rarely conceded any point. It was quite out of question to get him to change his mind. Owing to the many tasks he undertook, he was on the go day and night and spread nothing but unrest, hurry and nervousness around him.' Speer, on the other hand, recognised his positive qualities and commented that Kammler was extraordinarily energetic, fresh and ruthless. (R. Wachtel)

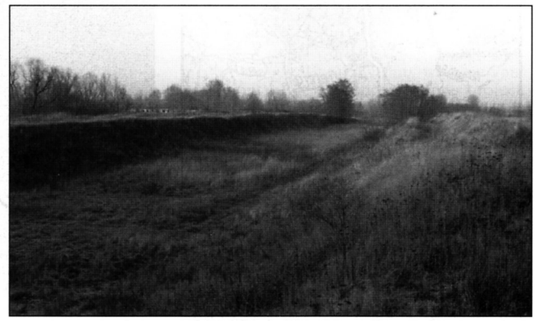
For testing, the first 150mm HDP cannon was built at Hillersleben, an artillery test range on the Colbitz-Letzlinger heath, 20 kilometres north-west of Magdeburg. *Above:* **Four cross-sections of the multi-chambered cannon can be seen in this picture of the test gun as well as the screwed breeches which closed the side chambers. (Bundesarchiv)**

HOCHDRUCKPUMPE, V3

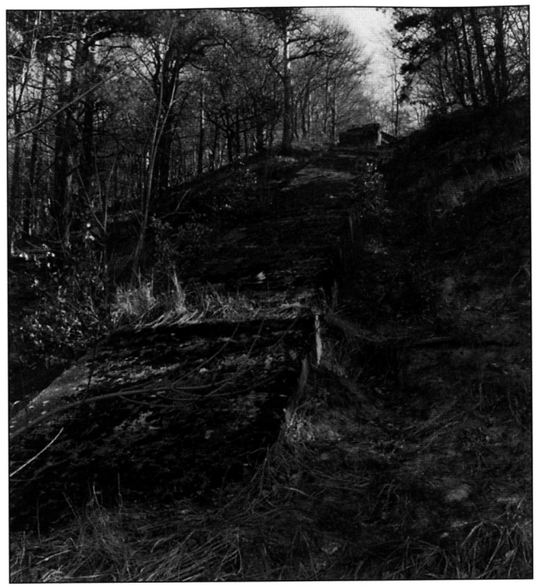
The idea of a multi-chambered gun had reappeared from time to time since the middle of the 19th century and in 1918 a patent for such a long-range weapon had been registered in France to retaliate against the German 'Paris Cannon' which had been shelling the French capital from March that year. However, the German armies soon withdrew, the Armistice was signed and that cannon never materialised. However, the tables were turned in June 1940 when, following the French defeat, the Germans came across the old patent and in 1942 the chief engineer of the Röchling Eisen- und Stahlwerke, August Coenders, adapted the concept. He produced plans for a smooth-bore multi-chambered gun which consisted of a very long barrel with pairs of lateral chambers at periodic intervals. After the shell was loaded in the breech, a first charge started the projectile up the barrel. As the shell passed each pair of lateral chambers, additional propellant charges were ignited by the flash, thus adding a fresh quantity of gas and further accelerating the shell until a very high muzzle velocity was achieved.

By early 1943, Röchling had built a model on a reduced scale proving that a 2cm prototype worked quite well. Convinced of the soundness of the design, Röchling then approached Albert Speer, the Minister of Armaments and Munitions, and told him of their plan for a gun which would be able to fire fin-stabilised shells of 140kg over a distance of 160 kilometres. A 50-barrel battery of that kind, with a rate of fire of one shot per barrel every five minutes, could fire 600 shells at London every hour.

Speer was favourably impressed and in May he informed Hitler about the proposed long-range cannon which would be able to bombard London. The idea of an 'England Cannon' captured Hitler's imagination and he demanded its immediate development.



Left: **The gun was under repair when the picture was taken. The breech had been unscrewed from the barrel (off the picture to the right) and turned upside down, consequently, the rear of the breech is facing the barrel (see also page 3, top left). (Bundesarchiv)** *Right:* **The Hillersleben test range lies north of the village of that name, with the guns positioned to fire to the north. The two long trenches for the HDP installations were located side by side in the south-eastern corner of the range. Used until 1990 by the Red Army, the range with all its buildings and gun positions now lies derelict and overgrown.**



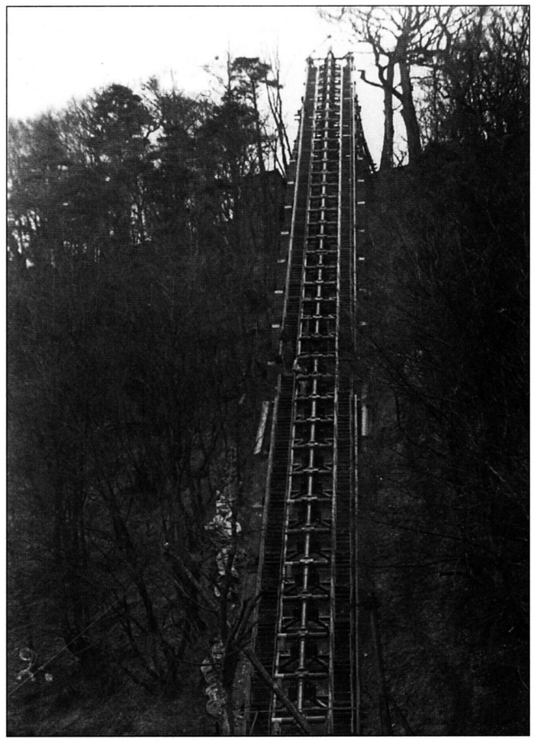
Left: **Having attended a demonstration of the HDP at Misdroy, Generalmajor Dornberger wrote: 'An enormous number of gunners was required to service the weapon, standing on the staircases that ran to right and left sides of the barrel, and reloading the T-pieces with propellant charges between rounds'. (Bundesarchiv)** *Above:* **Alvin Gilens discovered this surviving ramp which still shows — as does the 1944 picture left — the long one-piece concrete slab which lay beneath it.**

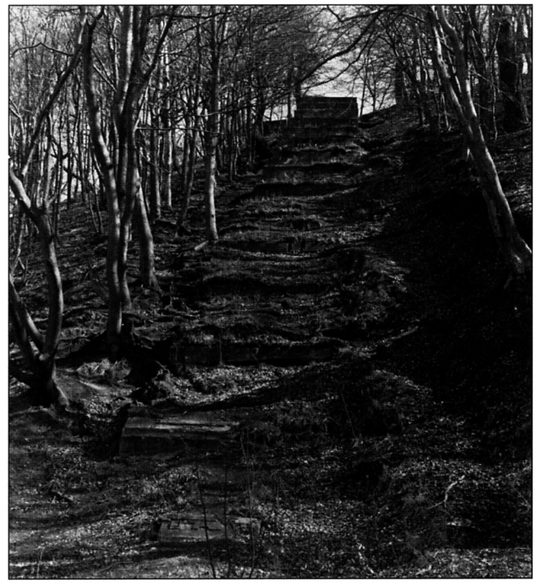
The project was given the code-name HDP (Hochdruckpumpe — high pressure pump) and the construction of two 15cm cannons was started for development and testing, the first at Hillersleben, an artillery test range about 20 kilometres north-west of Magdeburg, the second at Misdroy.

In the summer of 1943, with the V1 still suffering technical problems and the V2 program badly hit by the Bomber Command attack on Peenemünde (see *After the Battle* No. 74), Hitler's interest in the England Cannon was confirmed. Speer's minutes of a meeting in late August read: 'On the basis of my proposal, the Führer commands that it is essential to order the Hochdruckpumpe immediately, without waiting for the results of a test-firing. Test stands at Hillersleben and Misdroy, as well as the immediate construction of a permanent operational site, have to be given full support.'

Speer kept Hitler regularly informed of the tests of the 2cm HDP prototype and after a conference with him on September 30 and October 1 he noted: 'After successful tests with the 2cm barrel of the Hochdruckpumpe

Left: **In 1944, the Wollin area was German but now it lies in Poland and Misdroy has been renamed Miedzyzdroje. (Kalkofen is Wapnica and Lebbin Lubin.)** *Above*: **The HDP test gun was built on the side of a hill, with the lower part of the ramp standing directly on the ground (see top) and with large concrete supports to carry the upper part of the cannon. (A. Gilens)**





Left: **Careful examination of the two pictures taken in 1944 proves that they actually show one and the same gun. (Bundesarchiv)** *Above:* **Two test guns were built at Misdroy and Alvin found out this second ramp 100 metres away from the first one shown opposite. The lower part of this ramp appears to have been built in a series of steps and not as a continuous concrete slab which indicates that this is not the same ramp shown in the two contemporary pictures. (A. Gilens)**

the Führer wants to be informed continuously about results of the test of the 15cm barrel at Hillersleben and Misdroy. Contrary to planning hitherto, the tests are to be given priority under all circumstances and with considerable support.'

The construction of an operational site in the West was decided and a new code-name was chosen: 'Tausendfüssler' ('Millepede'). Excavation of a huge underground launching bunker was begun in the summer under a limestone hill at Mimoyecques in the Pas-de-Calais, about eight kilometres from the Channel coast from where the range to London was 160 kilometres (see *After the Battle* No. 6). Five batteries, with a total of 25 barrels, each about 130 metres long, were to be installed in five inclined shafts. The bunker would have two floors to service the weapon, at 30 metres and 100 metres, respectively, below the surface. A concrete roof five metres thick was designed to protect the openings of the shaft on the surface. To complete this gigantic work code-named 'Bauvorhaben 711' (Construction Plan 711), the Organisation Todt engaged 5,000 skilled workers and, according to a note of November 25, the first battery was scheduled to be completed by March 1, 1944, although, at this stage, neither a full-scale HDP gun nor even a projectile had yet been made to work!

The first 15cm HDP cannon was ready at Hillersleben at the end of October 1943 when trial firings started. The projectile of Röchling's design was about three metres long and weighed 140kg. This prototype, however, had a shortened barrel as it was only intended to test the internal ballistics and other basic technical problems so the range reached during these early experiments was less than ten kilometres.

Nevertheless, Hitler pressed on as the minutes of his meetings with Speer held between January 25-28 at the Führerhauptquartier disclose: 'The Führer has read with great interest the report on the trial firings of the Hochdruckpumpe which took place January 18-19, 1944. He orders development as well as production to be pushed ahead vigorously, and demands that output of ammunition be shortly increased from the 2,500, which until now was reported as the maximum possible, to 10,000 rounds per month, as had been ordered a long time ago.'

On January 15, a special unit — Artillerie-Abteilung 705 — was set up with two batteries to operate the HDP. This was under the command of Oberstleutnant Georg Borttscheller who had previously taken part in the development and testing of the weapon as a member of the Heereswaffenamt, the Army ordnance department responsible for weapon design.

By mid-January, the full-length barrel for the HDP erected at Misdroy was ready. It was 130 metres long and consisted of 32 cross-sections (each with two side chambers). The first trial firings were disappointing for not only were the muzzle velocities only 1100 metres per second — far from the 1500 metres per second needed to reach England — but the projectiles themselves appeared to be unstable in flight.

The chief of the Heereswaffenamt, General Emil Leeb, had observed some of the trials and he soon drafted in ballistics experts to tackle the defects of the Röchling design. The Reichsforschungsrat (RFR — Reich Research Council) was called in to solve the stability problem of the projectiles and from April wind-tunnel measurements were conducted at the Aerodynamics Research Institute at Göttingen. There, Professor A. Walchner commented critically on the work carried out so far by Röchling: 'Until now there has only a lot of nonsense been done in the development of projectile designs. With such matter, one has to use a bit of common sense and it will all go well.' When the chief of the development branch of the Heereswaffenamt, Generalleutnant Erich Schneider, looked further into the results achieved so far, he made it clear that in his opinion the project was a total failure and that it should be cancelled forthwith. However, with Hitler fully supporting the HDP, nobody dared to endorse his recommendation.

Nevertheless, Speer's deputy (Speer was ill), Karl-Otto Saur, had also become cautious and he broached the subject to Hitler on April 6-7. The Führer agreed to reduce the HDP operational site in the Pas-de-Calais to only three batteries instead of the five originally planned and he also approved the reduction of shell production to 5,000 rounds.

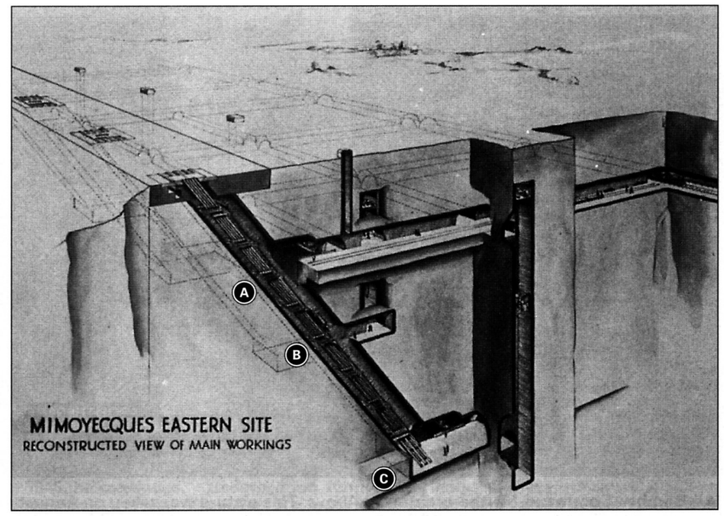
At the end of April, two sections of the barrel exploded at Misdroy after having fired only 25 rounds and an investigation quickly revealed the cause of the failure: because of faulty heat treatment during its manufacture, the barrel was not strong enough to withstand the multiple explosions. This failure lay with Röchling but the firm appeared unable to produce barrel sections with the specified strength and the Reichsforschungsrat refused to spend more effort on such an immature project. On May 8 the chief of the RFR's planning office, Professor Werner Osenberg, wrote to Reichsleiter Martin Bormann: 'I regard it as my duty to draw your attention to the Hochdruckpumpe project, which is being carried out by order of the Führer at this moment. In my view, it has to be regarded as a failure as far as barrel construction, projectile shape and uneconomical use of explosive material is concerned. For that reason, the use of personnel at the present time cannot be justified.' There is no recorded reaction from Hitler and it is probable that Osenberg's analysis was not even made known to him.

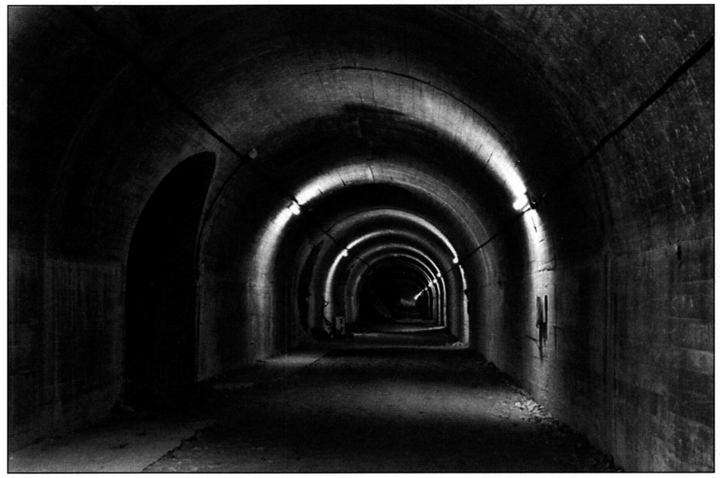
A new series of test-firings was carried out at Misdroy between May 20-24 when different shell designs were tried, including the one from Röchling, with others from Deutsche Faserstoff, Bochumer Verein and Witkowitz Eisenwerk. Reaching a muzzle velocity of 1370 metres per second, the latter design — 1.8 metre long and weighing 65kg in flight —

The bottom of the first ramp (see page 6) is now in the back garden of a private dwelling and the owner, Artur Jakisz, kindly allowed Alvin to take these pictures. Mr Jakisz recalled that the last pieces of metal and other non-concrete parts were removed from the bottom of the ramp in the mid-1990s. The long concrete slab that supported the lower part of this ramp ended in the middle, from which point the concrete supports took over. (A. Gilens)

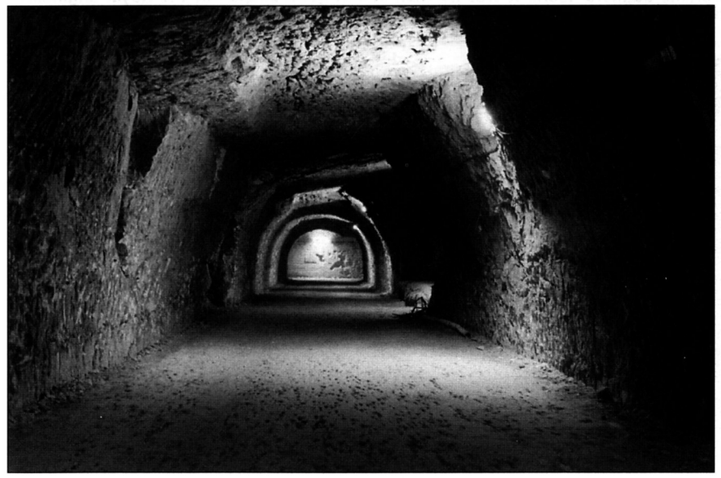
This is the series of nine concrete supports that carried the upper part of the second ramp (see page 7). When compared to what had happened to the first ramp (see top), the foundations appear to have been of better quality here and none of the supports had given way. Another 100 metres down the road, visible only as an earthwork on the side of the hill, Alvin found what may have been a third ramp. It had probably been the test ramp for the operational shortened version of the HDP, a cannon with 12 cross-sections mounted on a wood and steel framework and not on concrete supports. (A. Gilens)

At Mimoyecques, the construction of the huge installation code-named 'Bauvorhaben 711' or 'Wiese' begun in the summer of 1943. Work proceeded well in spite of bombing attacks in November, and on January 6, 1944, a report stated that the first inclined shaft was to be completed by February 15. Three weeks were scheduled for mounting the barrels and the first five HDP cannons were to be ready by March 15. The same report stated that 5,000 rounds could be stored there and that from April the first battery would be able to fire an average of 120 shells at London each day. After its capture, an investigative team under Colonel T. R. B. Sanders inspected the installation and produced this sketch plan. It was noted that work on another site had been started 1000 metres to the west, although abandoned after the bombing in 1943. Hence, the initial plans for Mimoyecques were for two underground installations, each with five clusters of five barrels: a total of 50 HDP cannons. The shafts were inclined at 50 degrees from the horizontal, each housing a cluster of five 127-metre-long barrels.



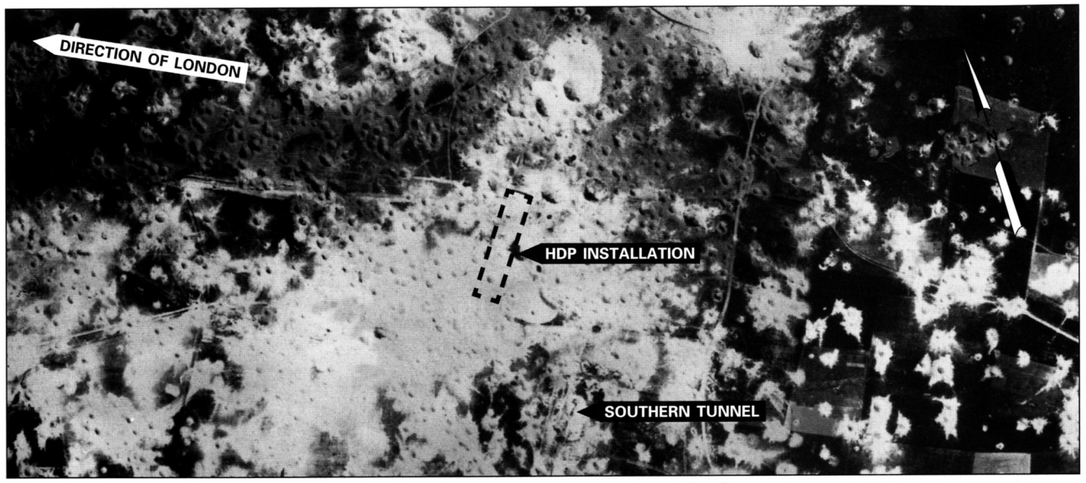


This is the main gallery as it appears today, looking towards the northern entrance.



Gallery No. 9 with the railway tunnel in the background. Shaft No. IV is just behind the photographer.

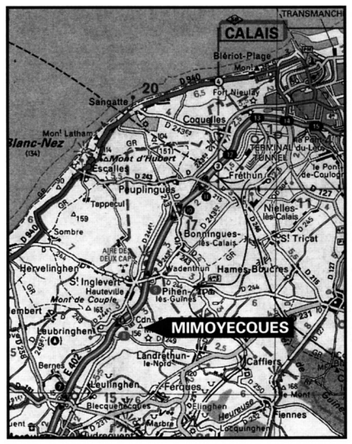
The main service floor [A] was 30 metres below ground. It comprised the railway tunnel (on the right in the sketch) some 650 metres long. In the centre, the gallery was larger for about 250 metres and an unloading platform was just beside the line. Parallel, and about 100 metres apart, lay another gallery and in between, and perpendicular to them, were another eleven numbered 3 to 13. Nos. 6, 7, 8, 9 and 10, served the five inclined shafts numbered Nos. I, II, II, IV and V. At their lower ends [C], 100 metres below ground, the shafts were serviced by another level of galleries and there was also a third intermediary level of service tunnels [B]. There were several vertical shafts, both between the various levels and to the surface. Some were intended to accomodate lifts to move personnel, powder charges and ammunition down to the lower levels while others were to ventilate the fumes when the breeches were opened after firing. By the beginning of 1944 there were so many problems with the development of the HDP cannon and projectiles that it was questionable as to whether the weapon would ever be made to work and reach the planned range so in March the Heereswaffenamt proposed to reduce the installation to just three batteries and work concentrated solely on Nos. III, IV and V. On the surface, a five-metre-thick concrete slab was cast to protect the shafts where they emerged on the hilltop. Covering just the three completed shafts, some 24 metres apart, it was 70 metres long and 30 metres wide. When abandoned in July, 60 per cent of the galleries of the main floor had been concreted but not the inclined shafts as this was to be done when the steel supports of the five-barrel clusters were in place. On November 5, 1943, the US Ninth Air Force bombed Mimoyecques for the first time, and again on the 8th and 10th. After three months of respite (the interval used by the Germans to cast the protective slab), B-17s and B-24s of the US Eighth Air Force launched ten raids between March 19 and June 22. Nevertheless, work continued and on June 2 a report stated that the installation of the first five barrels would begin on July 15 and would be completed by August 15. The installation of the second cluster of five barrels was planned to be completed by September 15 and the third on October 15.



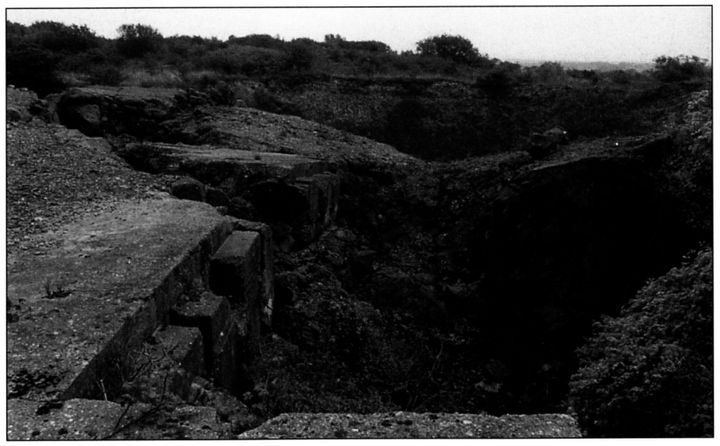
Above: This picture was taken on August 4, a month after the raid by No. 617 Squadron. Six Tallboy craters are visible amid the cratered landscape.

RAF Bomber Command hit the area on June 22 when 98 Lancasters dropped 400 tonnes and three more raids followed until July 6 when No. 617 Squadron dropped 16 12,000lb Tallboy bombs. One clipped the concrete slab and five were near misses causing the collapse of one of the shafts and some of the galleries. Having inspected the damage, German engineers reported the following day that installation of the HDP barrels was now totally impossible. On August 4, the Eighth Air Force launched a B-17 'Aphrodite' — a radio-controlled aircraft packed with explosive — against the target but it was mis-directed at the tunnel entrance of the western site which had been abandoned in November 1943. In spite of all these attacks, aerial reconnaissance indicated that work appeared to be continuing (the Germans were actually repairing the railway tunnel entrance) so Bomber Command launched yet another attack on August 27. With over 200 aircraft dropping 800 tonnes of bombs, it was the heaviest raid to hit Mimoyecques. Less than ten days later, on September 5, the 3rd Canadian Division overran the abandoned workings.

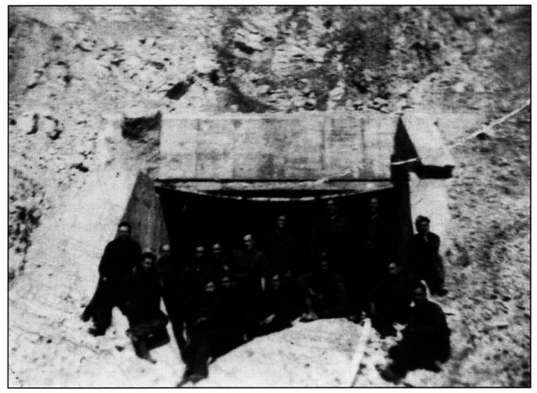
This picture of one of the firing slots in the concrete slab was taken in 1945 by Colonel Sanders' team. It was by then still in good shape but the Royal Engineers destroyed this part of the installation so that none of the three slots survived.



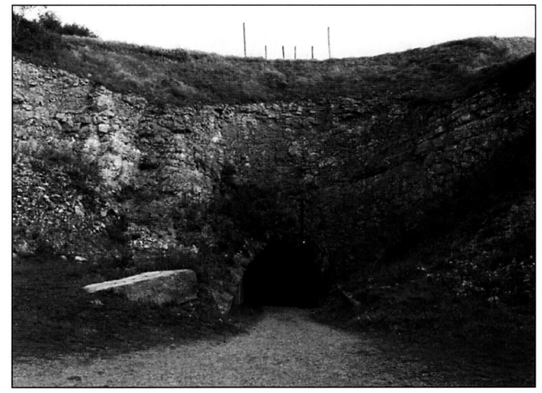
There is no village called Mimoyecques, the workings actually being located at Landrethun-le-Nord, between Marquise and Guînes. To reach the HDP site, take the A16 motorway at Calais, drive southwards and take exit No. 9.



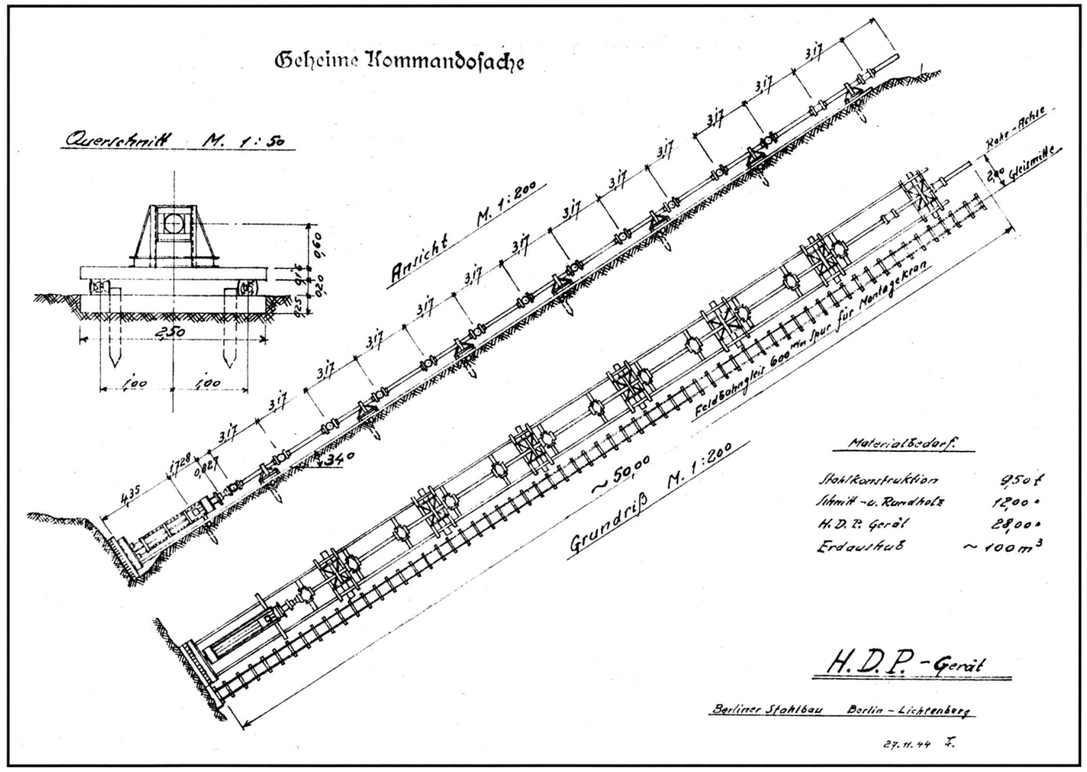
Our comparison shows a surviving corner at the top of shaft No. V. In the background, the crater of the Tallboy which clipped a corner of the concrete slab.



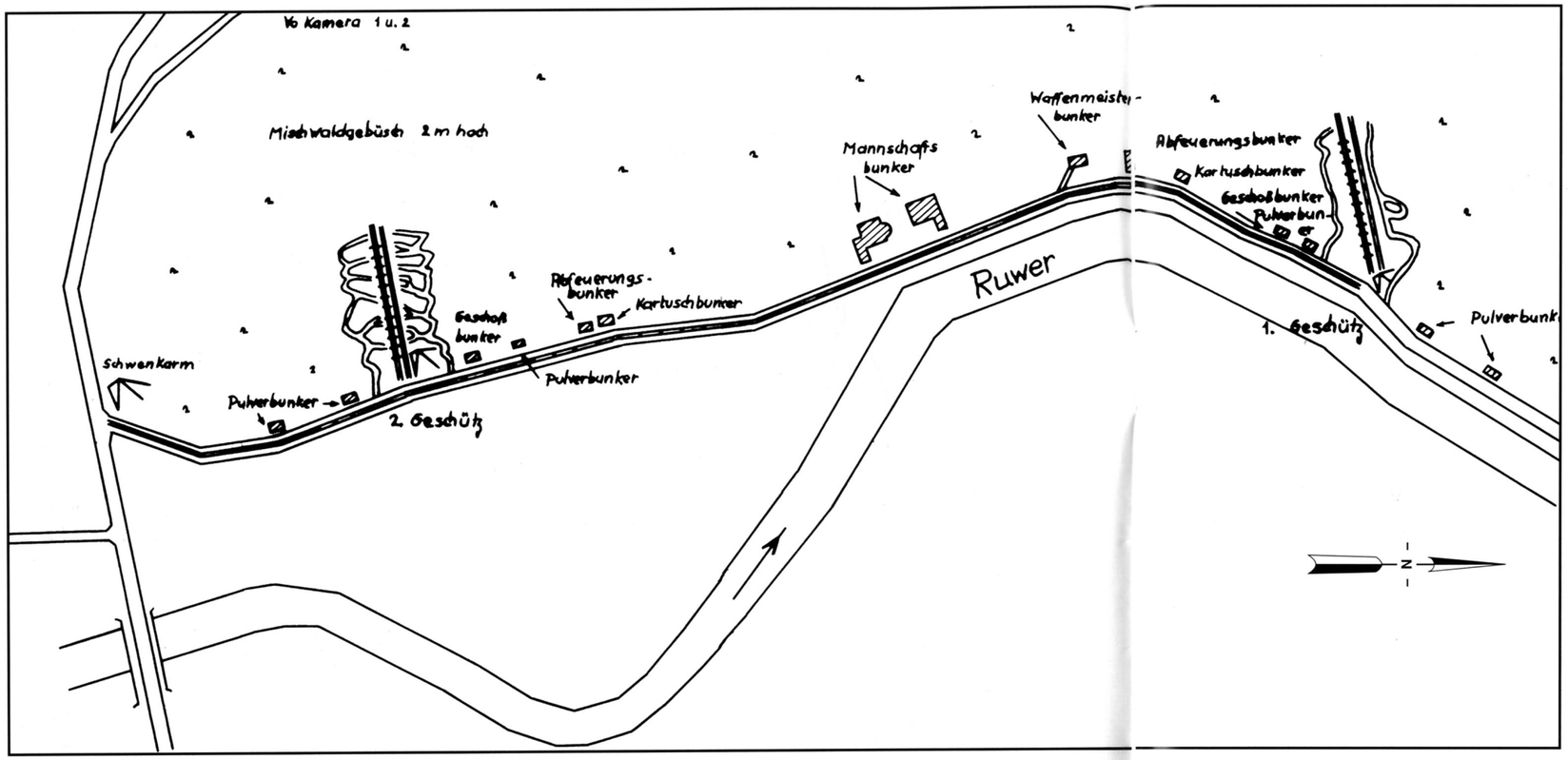
Left: This was the southern entrance of the railway tunnel as it appeared late in 1944 during the inspection by Colonel Sanders. Note the pipe bottom right, probably one being used to pump out flooded chambers. Colonel Sanders' mission was on site for four months and in his report dated February 21, 1945, he concluded that the installation could be repaired and pose a threat to London. It was therefore decided to destroy the underground facilities and Royal Engineers packed ten tons of explosives in the galleries. The resulting explosion on May 9 failed to close the entrances and a further 25 tons was blown at either end of the railway tunnel on May 14 (see ***After the Battle*** No. 6). *Right:* When in the early 1960s it was decided to use the abandoned tunnels for a mushroom farm, 30 metres of the hillside above the old southern railway entrance had to be removed to establish a safe access.

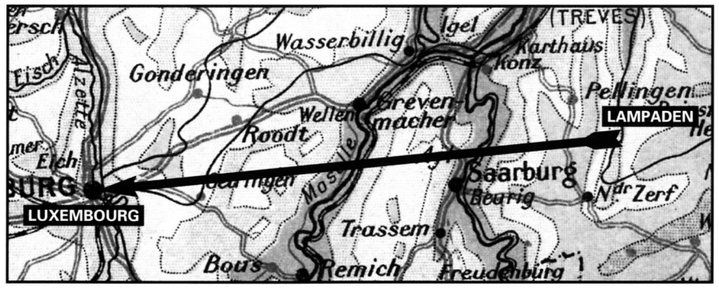


This is now the entrance to the 'Forteresse de Mimoyecques' — note the remains of the tunnel walls in the foreground. A fascinating one-hour tour of the galleries at the 30-metre level shows how, in spite of the Royal Engineers efforts, most of the underground tunnels and galleries have survived. A full-size section of a mock-up of an HDP cannon can be seen angled skywards in what remains of shaft No. IV. There is a memorial to Lieutenant Joseph Kennedy, brother of the late US President, killed in 1944 when piloting a B-24 'Aphrodite'; another memorial to the bomber crews killed while attacking the installation, and a third to those many conscript workers who lost their lives during these attacks. The 'Forteresse de Mimoyecques' is open from April to November (Telephone: 03 21 87 10 34). Take warm clothing for the interior is always cold.



The huge and mysterious installation at Mimoyecques became to personify the HDP weapon even though no barrels were installed or any shots fired. Compared to these 127-metre-long barrels planned to be installed near the coast at Calais, the four HDP cannons that went to war inland were of a 50-metre-long shortened variety. This plan of an operational cannon was drawn on November 26, 1944. It shows the breech-block in a pit dug out at the bottom of a slope, the 12 cross-sections of the cannon, the wood framework and the seven steel substructures that supported it. On the right of the barrel can be seen the 60cm rail track for the mobile crane used to assemble the gun. Cannons Nos. 1 and 2 were deployed at Lampaden in Germany, target Luxembourg, and Nos. 3 and 4 at Buhl in Alsace, targeted at Belfort.





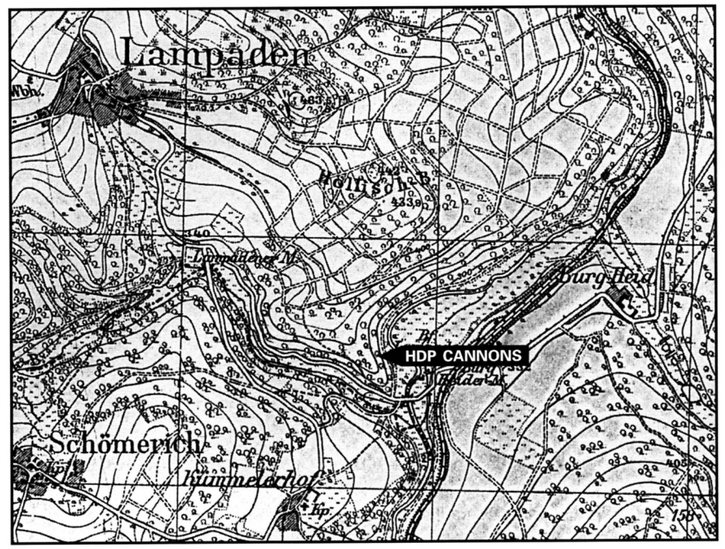
The two HDP cannons of the 1. Batterie of Artillerie-Abteilung 705 were installed near Lampaden, 12 kilometres south of Trier. This detailed plan of the firing site appeared as an annex to the report on the first employment of the HDP dated January 15, 1945. The site extended over 300 metres along the western bank of the river. At the beginning of the railway, by the side of the road on the left, a 2-tonne crane (Schwenkarm) was provided to off-load the various parts of the guns from trucks to the railway carriages. When the cannon was operational, this same crane was used to move the crates of shells and propellant charges. At the bottom of each cannon, another crane bridged the gap from the railway. Running alongside the cannon was a 60cm-gauge railway carrying the mobile crane used to assemble the barrel. At the bottom of the slope, a series of sheds held a total of 50 rounds, 25 for each cannon. There were three sheds for the propellant charges (for the side chambers, 18 of them for each shot), one for the cartridges (to load the breech, one for each shot) and one for the shells. Though this sketch named these constructions 'Bunker', the report called them 'Hütte' and an annex clearly showed what they were: quite simple wood constructions 3.5 metres long, 1 metre wide and 1.25 metres in height. There was also one firing shed for each cannon and two larger sheds were provided in between them, one each for the crews and the gunners.

attained a range of 90 kilometres. By the end of the month, the Heereswaffenamt reported confidently that it was possible that the required range would be reached.

After further meetings with Hitler during the course of May 22-25, Saur recorded: 'Have informed the Führer about the result of the latest trial firings with the Hochdruckpumpe at Misdroy. He expects the continuation of tests in view of the special task as England Cannon, as well as for the possible employment of the principle of the Tausendfüssler for other purposes.'

However, the 'England Cannon' was destined never to fire any shots in anger. The Allies had kept a close watch on the construction at Mimoyecques and the first air attack hit the HDP bunker in November 1943. Up to August 1944, a total of 18 further bombing raids were carried out against the site during which a total of 4,100 tons of bombs were dropped. Then, in the first days of September, Canadian troops overran the abandoned site.

From June 1944, the subject of the HDP was no longer raised by Speer at the regular armament conferences with Hitler but, following the attempt on Hitler's life, the SS progressively took it over. At the beginning of July another defect caused another section of the barrel to rupture at Misdroy as a result of which a third of the barrel had to be



replaced. Consequently, Röchling was directed to use a steel richer in nickel and to pre-test each section to a pressure of 2,500 atmospheres in the factory.

From August, a muzzle velocity of 1500 metres per second was known to be unrealistic so a shorter range was accepted as being practical for purposes other than what was originally intended. The development of the long HDP barrel — the 130 metres as envisaged for the England Cannon — was abandoned and instead shortened versions were planned. It seems that plans were made for a 60-metre-long cannon and an 80-metre-long cannon and by mid-August a plan was agreed for the LRK 15 F 58 (LRK, Langrohrkanone — long-barrelled cannon) which could be brought into action at the fighting front. This version comprised 12 cross-sections and was about 50 metres long.

A demonstration of this 12 cross-section HDP cannon was held at Misdroy on November 14 and it went off without any unusual occurrences. Plans were already being made for the deployment of the weapon and two days after this demonstration a report gave the basic data for the construction of an operational firing site. To build a site for one gun would need 40 men working for ten days; three to ten tonnes of steel; about ten cubic metres of wood, with 150 to 200 cubic metres of earth to be excavated. The hillside on which the gun was to be set should be at an angle of 30 degrees, or better 34 degrees, and 30 to 50 metres long and, of course, facing the enemy front. As the dispersion of shots was reported as being three kilometres in length and up to 800 metres laterally, it was recommended that the target area should be at least five kilometres long and one kilometre wide. The rate of fire was to be two to three shots per hour. In this report, the gun was referred to as 'Fleissiges Lieschen' (Busy Lizzie).

The southern ramp at Lampaden as it appears today. The January 15 report states that to build one ramp — dig out the earthworks and build the wood framework — required 35 men working for eight to ten days. The actual assembly of the gun took a 28-man team four days, ten men being required to bring the parts of the cannon to the bottom of the ramp and load them on the mobile crane; 12 men to manoeuvre that crane up and down along the slope as no motorised winch was available, and six to fit and assemble together the many pieces of the cannon.

The 1945 report says that the engineers of Organisation Todt excavated a total of 250 cubic metres of earth and rocks at Lampaden, all by hand save for the digging out of a larger excavation at the top of the ramps where a four-metre clearance had to be provided at the muzzle end. Explosives had to be used to excavate this pit which is still clearly visible at the top of the southern ramp. Jean Paul was standing in it when he took this picture. The Ruwer can be seen in the background, beyond the field.

Left: **This is the northern ramp as it appears today, looking down towards the Ruwer river.** *Right:* **The same northern ramp, pictured in the direction of the fire: Luxembourg is 42.5 kilometres away to the west. Although the HDP cannons were installed rigidly on the slope (the 1945 report specified that they had to be adjusted with great precision, plus or minus one tenth of degree of the theoretical aiming point), their range was adjusted by varying the charges in the side chambers. The first eight pairs of chambers were always loaded with full charges (3.1kg of explosive each) but, depending on the range to the target, the remaining side chambers would be loaded with either full or half charges (2kg only) or not at all. To hit Luxembourg from Lampaden, the first nine pairs of chambers were loaded with full charges but none in the 10th, 11th and 12th. Together with the charge in the breech, the total propellant was over 60kg and the muzzle velocity was then 884 metres per second.**

In the 1945 report on the first employment of the HDP, the commander of the 1. Batterie described how much time and effort had been spent in hiding the Lampaden site from Allied aircraft. This was all the more difficult when the barrel heated up as this in turn warmed the camouflage lying on top of the installation, thus melting the snow. So despite the white paint disguising the installation, the outline of the gun became identifiable. The slopes of the Ruwer river valley at Lampaden were — and still are — covered by bushes and trees but these were not high or thick enough to camouflage the guns from the air. *Above:* **The narrow-gauge railway running along the track at the bottom of the slope ended at the bottom of the northern ramp (see the sketch plan on pages 12-13). Here (the northern ramp was just off this picture to the right), by the side of the track, stood two sheds, one for propellant charges and the other for the shells.**

Although the report said that 700 rounds of ammunition would be produced before January 13, 1945, and a further 800 rounds by February 1, as late as the end of November no decision had been made as to the type of shell to be used. The minutes of a discussion between Dornberger and Kammler in Berlin on the 29th read: 'Results of the HDP firings at M[isdroy] must be received as soon as possible in order to determine the type of projectile to be used'. On December 22, ten rounds of the 0-Serie, the pilot production batch, were test-fired at Hillersleben and the result was reported as good. The following day, Major Axster (who at BzbV Heer, Dornberger's staff, had assumed responsibility for the HDP and Rheinbote projects) reported to Kammler that 50 rounds of ammunition would be available at the front on December 29, and another 150 rounds by the end of the first week of January.

By mid-November, Röchling had delivered two shortened HDP cannons and Kammler ordered their immediate deployment in support of 'Wacht am Rhein', the major offensive then planned in the West. The chosen operational site was at Lampaden, 12 kilometres south of Trier, and work began to install the two cannons on the slope on the western side of the Ruwer river. Their target was to be Luxembourg, 42.5 kilometres away.

Under Kammler's Division zV, Artillerie-Abteilung 705 took over and, as from November 30, the men of its 1. Batterie (7 officers, 33 NCOs and 96 men) started to assemble at Zerf, a town five kilometres to the south of Lampaden. From mid-December the battalion was under the command of Hauptmann Patzig.

WAR DIARY, ARTILLERIE-REGIMENT zV 901

22 November
SS-Gruppenführer Kammler visiting Artillerie-Abteilung 836. Discussion between SS-Gruppenführer and Oberstleutnant Honig regarding construction of emplacements for HDP.

30 November
Artillerie-Abteilung 705 with 7 officers, 33 NCOs and 96 men arrive at Zerf.

16 December
Preparations continuing for installation of HDP at Lampaden. Transportation situation difficult – this resulting in sparse and erratic arrival of equipment.

20 December
Impossible to continue with further construction work for HDP at Lampaden as transports not arriving.

22 December
HDP still able to proceed only to a very limited extent with installation because transports with essential overhead sections are still missing. Work carried out on underground shelters for personnel.

25 December
Steel substructure for HDP cannon No. 1 at Lampaden completed; breechblock and five cross-sections with tubes assembled.

26 December
Hauptmann Patzig, the newly arrived officer commanding Artillerie-Abteilung 705, arrives at Gruppe and reports that the assembly of HDP cannon No. 1 at Lampaden should be completed by December 28. He is presently unable to say when the assembly of cannon No. 2 will be completed as this depends on recovery of parts from the bombed railway sidings at Trier. Gruppe promises him two cranes for this recovery operation.

28 December
HDP cannon No. 1 at Lampaden ready for firing, albeit without munitions at this stage.

29 December
Arrival of first munitions (44 projectiles) for HDP. Substructure for cannon No. 2 being assembled. Arrival of crane for recovery of parts from bombed railway sidings at Trier. The division commander demands that cannon No. 2 be made ready for firing by December 30.

30 December
In the presence of the division commander and the commander of Artillerie-Abteilung 836, HDP opens fire with five projectiles against Luxembourg.

31 December
HDP fires 23 projectiles against Luxembourg. Following the recovery of parts, assembly has commenced of superstructure for HDP cannon No. 2 at Lampaden.

1 January
No HDP firing because on orders from Division zV a munitions stock of some 20 projectiles is to be retained at all times for firing at targets in conjunction with spotter planes. Luftwaffenkommando West has authorised observation flights by the Hecht detachment. Construction of cannon No. 2 at Lampaden completed. Ready for firing following adjustments to cannon.

2 January
No HDP firing.

3 January
No HDP firing. Two more HDP installations have been completed at the factory. Oberstleutnant Honig receives order from division commander to reconnoitre positions in the Eifel area from which to attack Verviers.

4 January
HDP fires 16 projectiles from cannon No. 1 against Luxembourg. Provisional results of Oberstleutnant Honig's reconnaissance are as follows: HDP cannons for use against Verviers should be set up around Hellental-Hollerath, 45km to the west of Ahrweiler.

5 January
No HDP firing due to lack of munitions. Fresh heavy snowfalls making transportation even more difficult. Troops continually having to clear snow to keep roads passable.

6 January
No HDP firing due to lack of munitions. Further heavy snowfalls making transportation considerably more difficult – especially for the specialist heavy vehicles.

7 January
No HDP firing due to lack of munitions. On orders from Division, Oberstleutnant Honig's reconnaissance for HDP positions in the Eifel area for use against Verviers to cease forthwith. An immediate reconnaissance for positions for use against Belfort to commence in the Vosges area around Colmar-Munster-Guebwiller. Division orders cannons No. 3 and No. 4 to be positioned there.

9 January
Eighty projectiles delivered by lorry for HDP. Cartridges for these also on the way by lorry. Heavy snowfalls continuing.

The transport system in the West — railways and roads — was overstrained by the preparations already in hand for the coming offensive with the result that the parts for the HDP arrived piecemeal. When the offensive commenced on December 16, neither of the two guns was ready for action nor was any ammunition available. Nevertheless, two days later, Kammler sent a telex to Generalleutnant Siegfried Westphal, Chief-of-Staff of Ob.West, to describe the operations planned: 'The HDP will be brought into action with two barrels in a troop trial at the operational area of Ruwer at Trier, with the target being Luxembourg. Both barrels have been ready for action since December 15, 1944. During the month of December, 50 rounds will be made available. Operational and target areas have been chosen with regard to firing range (60km) and spread (2.5 - 5km), as well as the angle of inclination of the barrels, which are rigidly installed upon mountain slopes with special trestles (34 degrees). The shells weigh 90kg, of which 7 to 9kg for the explosive charge. Request agreement in principle with making of first attempt from December 20.'

Anticipating that the left wing of the 7. Armee might soon reach the Luxemburg sector, Ob.West immediately replied:

In the middle of the Lampaden HDP site, in between the two cannons, two underground shelters had been built for the gun crews (see Mannschafts-Bunker on the sketch on page 12-13). *Left:* **This is where the plan places these shelters and traces of digging still appear today at the bottom of the slope. The narrow-gauge railway that served the whole length of the HDP site ran on this track, the southern gun being 100 metres or so ahead of the turn of the track and the northern one 100 metres behind the photographer. Though the sketch plan named the sheds and shelters built at Lampaden as 'Bunker', nothing solid was built there, save for the concrete wall that supported the breech-block at the bottom of each ramp.** *Right:* **This would appear to be the remains of one of the underground shelters provided for personnel.**

WAR DIARY, ARTILLERIE-REGIMENT zV 901

11 January
HDP fires 20 projectiles from cannon No. 1 against Luxembourg.

12 January
Eighteen projectiles fired by cannons No. 1 and No. 2 against Luxembourg.

13 January
HDP fires 22 projectiles from cannons No. 1 and No. 2 against Luxembourg. Oberstleutnant Honig reports reconnaissance of suitable positions 3km to the north-west of Guebwiller as emplacements for HDP cannons No. 3 and No. 4.

14 January
No HDP firing. Following orders from the Reichsführer-SS, an SS cameraman filmed installations and firing at HDP.

15 January
No firing as munitions all expended apart from 20 projectiles held in reserve on orders from Division. Order issued for transfer of 2./705 to the sector Guebwiller-Schweighouse in the Vosges.

16 January
HDP fires six projectiles from cannons No. 1 and No. 2 against Luxembourg.

17 January
Sixty projectiles for HDP transported overland from Feucht.

18 January
HDP fires 19 projectiles from cannons No. 1 and No. 2 against Luxembourg.

20 January
HDP fires 24 projectiles from cannons No. 1 and No. 2 against Luxembourg.

21 January
No HDP firing.

23 January
As during preceding days, no HDP firing since only 30 projectiles remain (these to be held back for firing in conjunction with spotter aircraft).

24 January
No HDP firing whatsoever as munitions situation remains unchanged.

25 January
Planned firing in conjunction with spotter aircraft has to be abandoned, as the Hecht Luftwaffe detachment does not take off.

26 January
No HDP firing.

27 January
Construction proceeding of cannons No. 3 and No. 4 in the Vosges. Preparatory earth-moving works almost complete. Cannon No. 3 is on the way by rail transport. Cannon No. 4 to be moved up. Production of munitions for HDP most seriously jeopardised by events in the east.

28 January
Munitions situation at HDP remains unchanged – no firing.

29 January
No HDP firing in Lampaden area; assembly of cannon No. 3 commenced in the Vosges area. Heavy enemy pressure on the Alsace bridgehead making situation highly critical for 2./705.

30 January
Munitions situation at HDP remains unchanged – no firing.

1 February
Due to events on the Eastern Front, there is no prospect of an early supply of munitions to HDP. The next batch of 70 projectiles cannot be delivered for four weeks. At the same time, the situation in the Alsace bridgehead is becoming very critical. According to information from the army group in that sector, it is therefore not possible to count on long-term engagement by 2./705 against Belfort from the Guebwiller area. It is therefore decided that cannon No. 4 will not be transferred to the left bank of the Rhine, but instead stay entrained on the right bank. Assembly of cannon No. 3 is complete. Twenty projectiles are to be taken from the munitions stock of 1./705 (30 projectiles) and transferred to 2./705. After the firing of these 20 projectiles, cannon No. 3 is to be rapidly dismantled and moved over to the right bank of the Rhine so as to be transferred with cannon No. 4 over to the area of Hellenthal in the Eifel region. There both cannons are to be set up in the previously reconnoitred position for action against Verviers.

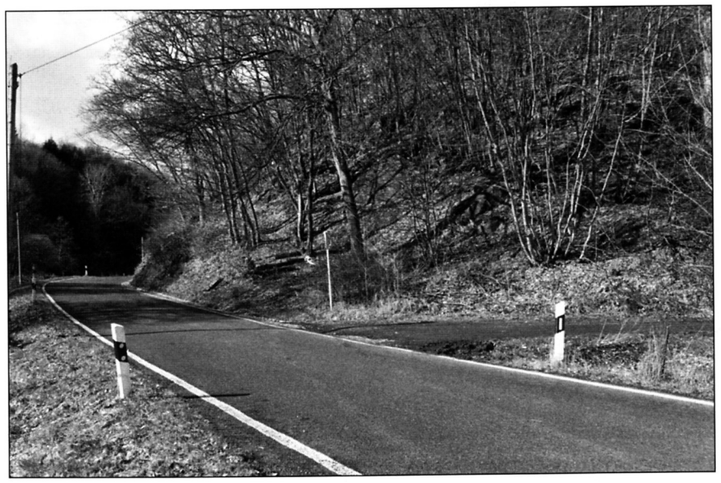
5 February
Orders received from division commander to the effect that 2./705 is not to be committed against Verviers, but rather against Thionville from the Trier area. Oberstleutnant Honig instructed to carry out fresh reconnaissance for the setting up of two cannons. The unfavourable development of the situation necessitates the rapid dismantling of the cannon of 2./705 at its present location at Guebwiller without any projectiles having been fired. The munitions which had been transferred overland (20 missiles) are to be returned to 1./705.

'Regarding the current fighting of Heeresgruppe B, Ob.West ask that the target for the HDP, which has been mentioned in the telex, not be used, as this could endanger own troops. In any case, it is requested that an inquiry be made on December 20 regarding the continued possibility of firing against that target.'

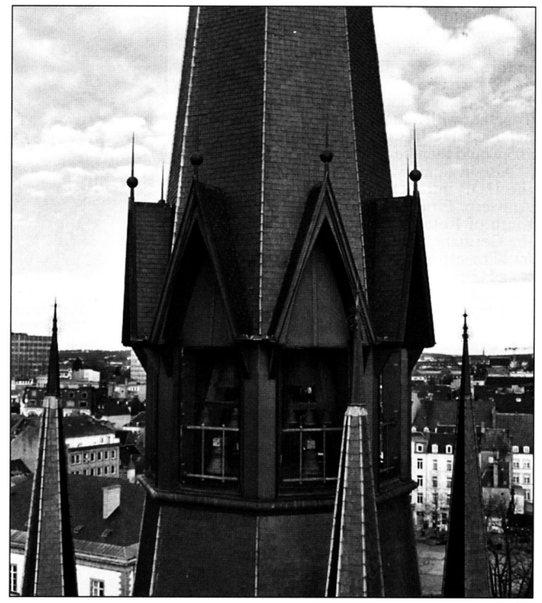
Equipment and material had still not arrived at Lampaden by December 20 so Artillerie-Abteilung 705 had to report that construction of the HDP had not made any progress. The breech and the first five cross-sections were finally in place by the 25th and three days later the first cannon was ready for action although no shells were available. Construction of the second gun was at a standstill because many parts for it were still on board a train that was caught up in the bombed-out Trier railway yards.

Delivered by the Heeresmunitionsanstalt (HMA — Army Ammunition Establishment) at Feucht near Nuremberg, the first 44 shells finally arrived at Lampaden on December 29. On the 30th, at 11.16 p.m., in the presence of Kammler, Artillerie-Abteilung 705 opened fire with five shots against Luxembourg. The HDP resumed firing early next morning with 12 shots until at 9.44 a.m. it appeared that the barrel needed to be re-adjusted. That work took most of the day, firing being resumed at 7.43 p.m. with a series of 11 shots. Meanwhile, an investigation was conducted in the area between the firing site and the front line, some 30 kilometres away, to check that no shorts had occurred. None were reported.

The second HDP cannon was ready for action on January 2 but could not begin firing because of the lack of ammunition. Actually, 20 shells were available but these had been held back as Kammler had ordered that they only be fired when aerial observation was available over Luxembourg to report the fall of shot. The Luftwaffe had detailed Kommando Hecht, a unit equipped with Arado 234 jet aircraft, to fly this mission but the aircraft failed to show up so in the end the last 16 shells were fired blind on the 4th.



By the side of the road between Lampaden (to the left) and Schillingen (to the right) lay the beginning of the narrow-gauge railway that served the HDP site. The bush on the right stands where the crane once stood. However, nothing remains today of the railway station where the HDP parts were unloaded which stood two kilometres up the road to the right across river. Even the rails have been lifted.

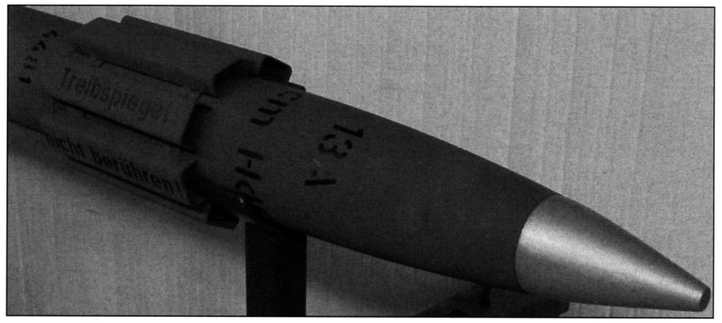


Left: **On January 16, the two HDP guns at Lampaden fired six shots against Luxembourg city. At around 5.18 p.m., one shell hit this spire of the Cathédrale Notre-Dame causing little damage. (G. Mirgain)** *Right:* **Alain Feltes, the cathedral sacristan, took this superb comparison for us from a narrow balcony at the top of the roof.**

The effect of the HDP bombardment of Luxembourg was insignificant. This list of recorded impacts is quoted by E. T. Melchers in his book *Bombenangriffe auf Luxemburg in zwei Weltkriegen* and indicates that 10 people were killed and 35 injured. (In his original list, M. Melchers included casualties for March 11 but these cannot be accredited to the HDP as the guns had been withdrawn from Lampaden by that date.) The 'Recorded shots' have been compiled from the war diary of Artillerie-Abteilung 705. Symptomatic of the military uselessness of the HDP shelling of Luxembourg, the only military damage that we could trace was that suffered by a US mobile laundry hit on January 12: 'An enemy rocket projectile of an unidentified type landed in the area of the semi-mobile laundry located with the 104th Evacuation Hospital in the city of Luxemburg, injuring seven men, three of them seriously, and causing damage to two vans and one tractor.'

CASUALTIES FROM THE HDP SHELLING OF LUXEMBOURG

	Recorded shots	*Recorded impacts*	*Dead*	*Wounded*
December 30:	5			3
December 31:	23	12		
January 4:	16	11	3	4
January 11:	20	17	2	3
January 12:	18	20		2
January 13:	22	23	1	
January 15:		6		
January 16:	6	7	4	3
January 18:	19	9		7
January 20:	24	12		13
February 15:	20	20		
February 16:	4	3		
February 22:	6	2		
Total:	183	142	10	35



The shelling of Luxembourg by the HDP came as a complete surprise to the Allies. Reconnaissance aircraft failed to detect the two cannons so the only measures taken were reprisal attacks against Trier and, for each HDP projectile exploding in Luxembourg, eight 155mm shells were fired at Trier by the artillery of the US XII Corps. *Above:* **An HDP shell is now on display in the military museum of Diekirch, 15 kilometres north of Luxembourg. The body is that of a genuine Röchling shell of unknown origin but the nose and tail have been rebuilt by the museum staff.**

When Röchling advised that the third cannon would be ready for delivery on January 5 and the fourth a few days later, on January 3 Kammler ordered that a new firing site be surveyed in the Eifel between Hellenthal and Hollerath. From there, the two new guns could be brought into action against Verviers, a major Allied communication centre in Belgium. For that purpose, a second battery of Artillerie-Abteilung 705 was set up under the command of Oberleutnant Fiedler. However, the military situation was changing by the day and on the 7th Kammler cancelled this plan and instead ordered the immediate construction of a new firing site in the Vosges mountains for operations against Belfort.

On January 5, Heinz Kunze, the director of the Sonderausschuss zbV (Special Committee for Special Duties) in charge of long-range weapons at the Ministry of Armaments and Munitions, demanded the production of 5,000 rounds of HDP ammunition and, three days later, another directive specified the production of 1,000 rounds per month from January to March. According to

a document dated January 8, and signed by Kammler himself, it was then planned to increase the size of Artillerie-Abteilung 705 to three batteries. Each one, with a strength of 157 men and two officers, was to have two HDP cannons, plus two replacement guns. Together with battery staff and other personnel, the total strength of Artillerie-Abteilung 705 would then be 557 men.

Also in January, plans were made to bring the HDP into action against a new target, Antwerp. From the part of the Netherlands south of Rotterdam which was still held by the Germans, the range to Antwerp was over 60 kilometres. Consequently, the 50 metre-long HDP would have to be used to its maximum range with a total powder charge of 120kg per shot (just over 60kg was necessary to fire at Luxembourg). The muzzle velocity was expected to reach 1050 metres per second. All these plans were illusory and never materialised.

On January 9, another 80 shells were delivered to Lampaden and both cannons opened up again on the 11th. Over three days, 60 shells were fired with the last 20 again held back for the planned aerial shoot. When a further 60 shells were delivered on the 17th, firing resumed on the 18th and the 20th, now with the last 30 shells being retained in case the Luftwaffe showed up.

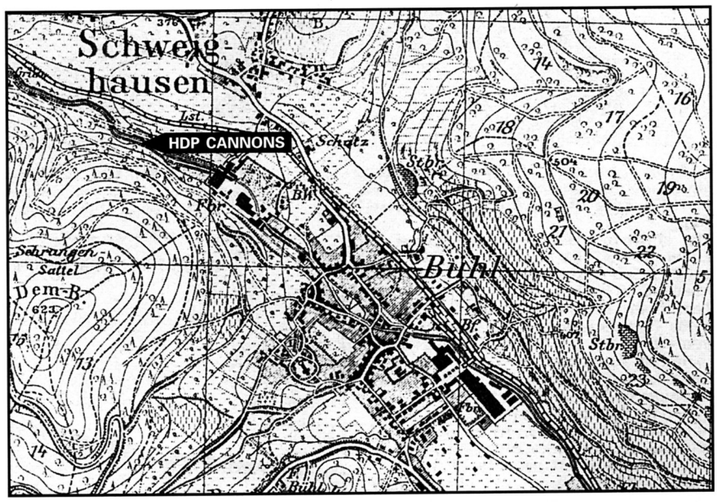
Meanwhile, at Buhl in the Vosges, construction work at the second firing site was proceeding apace. By mid-January, the elements of the third cannon were already on their way by rail with those for the fourth following on. However, the military situation in Alsace was deteriorating badly with the position of the 2. Batterie at Buhl becoming more and more untenable and on February 1 Kammler cancelled the installation of the fourth piece. He also ordered the third, the mounting of which had by then been completed, to quickly fire off 20 shells against Belfort before it was dismantled and moved, together with the fourth, back to Hellenthal in the Eifel with Verviers as the target. However, this plan had to be abandoned on the 5th whereupon the 2. Batterie with its two guns was diverted to a new location 30 kilometres south of Trier, at Niederlosheim, to fire at Thionville.

On February 12, Kammler was informed that no further ammunition would be supplied after the delivery of the final lot of 70 shells which were scheduled to arrive by the end of the month. He therefore ordered that the construction of the new firing site at Niederlosheim be abandoned and for the remaining shells to be sent to Lampaden to be fired off against Luxembourg. He also ordered Hauptmann Patzig, the Artillerie-Abteilung 705 commander, to turn his unit into a normal artillery group, detailing him to find his own guns.

While the men of the 2. Batterie started to assemble at Vielbach, near Koblenz, at Lampaden the 1. Batterie was still waiting for the promised aerial observation, However, with the situation at the front worsening, on the 15th, the two guns resumed firing. The same day the order came to start the immediate disassembly of one cannon to move it back to the eastern bank of the Rhine and to fire off the remaining shells with the other. The last six shells were fired on February 22 and the disassembly of the last cannon began immediately. The German gunners completed their withdrawal just in time as the US 10th Armored Division reached Zerf, five kilometres to the south, on the 26th.

On February 27, all the 'special equipment' of the two companies of Artillerie-Abteilung 705 — the four HDP cannons — was on its way back to the Röchling works at Wetzlar. Meanwhile, Hauptmann Patzig had obtained 12 105mm guns (schwere 10cm Kanone), and he re-organised Artillerie-Abteilung 705 with two batteries of six guns each at Herschbach, near Koblenz.

As Oberstleutnant Honig reported the construction of a new HDP site at a place '3 km nordwestlich Guebwiller', Jean Paul's detective nose focussed on Buhl, a small town in the Lauch river valley. There he contacted the local historian, Jean Bader, who said that although there were reports that the Germans carried out some mysterious activities at a place just upstream in January 1945, he confessed that nobody really knew what they were. Speculations had been made in the past, some even appearing in the Press, but overall it appears that the brief presence of the HDP at Buhl was unknown locally.



The HDP site had been completely cordoned off and none of the villagers saw or knew what was happening . . . only that the Germans were working day and night at the bottom of the Demberg hill. Even the windows in the toilets of a factory that faced the hillside from across the Lauch river were bricked up so that nobody could see out in that direction. Three Flak guns were set up and guards patrolled the woods around the site, turning back any children that wandered into the area. This is the upstream ramp, looking down, with the pit still visible at the bottom.

WAR DIARY, ARTILLERIE-REGIMENT zV 901

6 February
Still no further firing by 1./705 as munitions situation is unchanged and what little munitions remain still to be held back for firing in co-operation with spotter aircraft of the Hecht detachment.

7 February
Situation at HDP remains unchanged. Under the prudent leadership of the officer commanding Artillerie-Abteilung 705, Hauptmann Patzig, the entire operation to dismantle and reposition 2./705 to the right bank of the Rhine has been carried out under heavy enemy fire without loss to men or materiel.

9 February
Situation at HDP unchanged.

10 February
No HDP firing as munitions are still being conserved for firing in conjunction with spotter aircraft. Oberstleutnant Honig's reconnaissance of positions for cannons No. 3 and 4 (2./705) against Thionville is complete. The cannons are to be positioned near Niederlosheim.

11 February
Munitions situation at HDP remains unchanged – no firing.

12 February
SS-Gruppenführer Kammler advised by BzbV Heer that the manufacture of munitions for HDP is to end. Apart from the 70 projectiles expected at the end of the month, there will be no further supplies. At the suggestion of Gruppe Süd, SS-Gruppenführer Kammler orders that there is now no longer question of a new emplacement for 2./705 for firing against Thionville. He issues a verbal order to the officer commanding Artillerie-Abteilung 705 that the battalion is to convert to a conventional artillery unit.

13 February
No HDP firing as it is still envisaged there will be firing in conjunction with spotter aircraft.

14 February
Munitions situation at HDP remains unchanged – no firing.

15 February
Despite on-going discussions, the Hecht detail has failed to take off for days; accordingly 20 projectiles fired by 1./705 against Luxembourg from cannon No. 1 without target spotting from the air. Due to the tense situation in the Trier area, 1./705 (upon its own suggestion) is ordered to dismantle forthwith one of the two cannons at Lampaden and withdraw it by rail to the right bank of the Rhine and fire the remaining projectiles from one cannon. In order to assist in the event of any breakdown during the firing of the 80 projectiles which are expected to be available, some barrel sections of the dismantled cannon are to be held back in reserve.

16 February
HDP fires four projectiles against Luxembourg.

17 February
No firing by 1./705 as an attempt will be made to fire at least the last six projectiles currently available with the co-operation of target spotting aircraft.

19 February
No HDP firing.

22 February
The last six projectiles fired by 1./705 against Luxembourg as the situation to the west of Lampaden has become so tense that Division has ordered the immediate dismantling of the last cannon still in position and its removal to safety on the right bank of the Rhine. It is not possible to wait for the opportunity for firing with spotter aircraft due to the urgency of the situation.

23 February
Dismantling and withdrawal of the last HDP cannon commences. Supply of the final batch of 70 projectiles has been halted as permission has been refused for the setting up of another installation.

25 February
HDP must expedite the dismantling of the last cannon and carry out a phased withdrawal of the cannon as the leading enemy tanks have advanced to within 3km of the emplacement.

26 February
1./705 continuing withdrawal of cannon.

27 February
1./705 has without loss withdrawn the entire special installation together with all personnel and miscellaneous equipment and is now proceeding to the sector of the Gruppe where the battery is to undergo artillery training in Herschbach. The entire special equipment of Artillerie-Abteilung 705 is being transported by rail to the Röchling works at Wetzlar.

Following the liberation of Buhl, curiousity led local villagers to explore the place where the Germans had worked so secretively but all they found were two ramps on the slope, pieces of wood and an excavation at the lower end. *Left:* A concrete wall was built in the pit at the bottom of the downstream ramp but this was covered over when the hole was filled in by German prisoners of war at the end of the war. *Right:* The POWs were detailed to clear the site and remove all the wooden supports — this is all that remains to be seen of the upstream ramp.

RHEINBOTE, V4

From the mid-1930s, while the Heereswaffenamt held the monopoly in the field of liquid-fuel rockets, Rheinmetall-Borsig AG developed small solid-fuel rockets and began test-firing them in 1936. In 1940, following a request from the Reichsluftfahrtministerium (RLM — Reich Air Ministry), the company started developing assisted take-off (ATO) rockets for cargo gliders and in 1941, upon receiving a new request from the RLM, the rocket research team directed by Dr Heinrich Klein started to work on an ATO unit with a thrust of 50 tonnes.

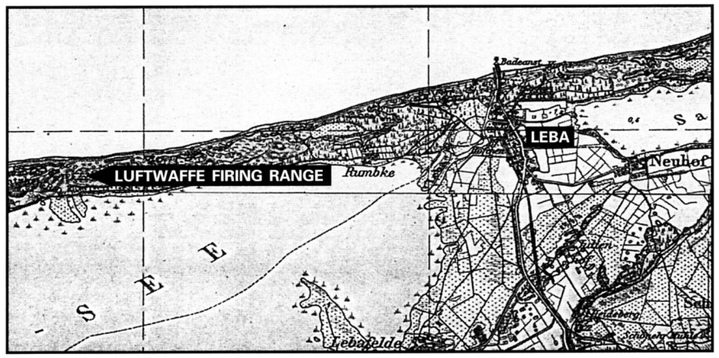
From these beginnings, plans were set in motion to develop a long-range solid-fuel rocket and in April 1941 Dr Klein approached the Heereswaffenamt with the proposal. He was referred to Generalleutnant Dornberger, then the head of WaPrüf 11 which was the office responsible for the development of rockets. From the beginning, Dornberger had strongly supported the development of the A4 liquid-fuel rocket, consequently he was not ready to see his prodigy endangered by competition. Arguing about the shortage of propellant powder, he refused to approve the development of the Rheinmetall-Borsig rocket but Dr Klein soon got support from the inspector of heavy artillery, Oberst Gerhard Hüther, who was in the process of asking for heavy artillery rockets. With the A4 still far from being operational, the chief of the Heereswaffenamt, General Leeb, supported Hüther's demand and in June approved the development of long-range rockets by Rheinmetall-Borsig.

Following this decision, the inspectorate for heavy artillery laid down a specification for the rockets in that they were to carry warheads in the range of 200 to 1000kg over distances of 100 to 120 kilometres. Rheinmetall-Borsig started working on a variety of plans for four-stage rockets but these grandiose schemes were soon discarded due to the shortage of propellant powder. Development therefore concentrated on a smaller project, a rocket weighing about 1.7 tonnes, of which the company said it could increase the range to up to 200 kilometres if the warhead was reduced to 40kg.

By the end of 1941, Rheinmetall-Borsig started to test its first designs and, as it was engaged on numerous developments for the Luftwaffe, it was allowed to share the use of the air force firing range at Leba on the Pomeranian coast. There, 30 kilometres north of Lauenburg (now Lebork in Poland), the Luftwaffe had developed an experimentation centre, with proving stands for engines and a complete set of ranging measurements, to such a degree that the place was dubbed Klein Peenemünde — little Peenemünde. From there, the trial rockets could be fired on a north-westerly course across the Baltic in the direction of Bornholm, a Danish island occupied by Germany which provided a grandstand view for observation and ranging. The distance from Leba to Bornholm was about 170 kilometres.

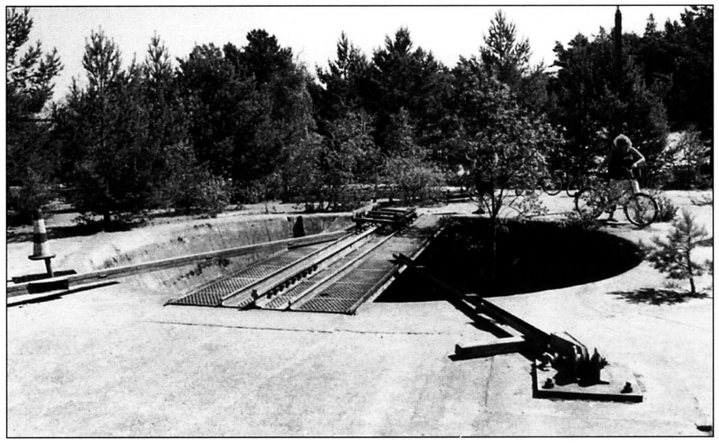
In the meantime, the multi-stage rocket had been given the name Raketensprenggranate 4831 with the code-name 'Rheinbote'. Rheinmetall-Borsig had designed projectile Rh-Z-61, Rh standing for Rheinmetall-Borsig, Z for long-range rocket, while 61 hinted at the planned range (160 kilometres) with inverted number.

The first series of tests at Leba spread over a year and saw the successive launch of ten test rockets. The first was a single-stage

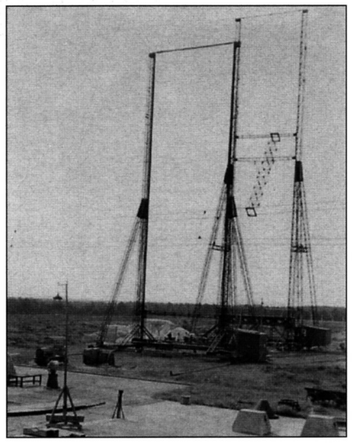


The first Rheinbote trial rockets were launched from the firing range developed by the Luftwaffe in the sand dunes six kilometres west of Leba. Now in Poland, Leba has retained its name but the nearby Rumbke is now Rabka.

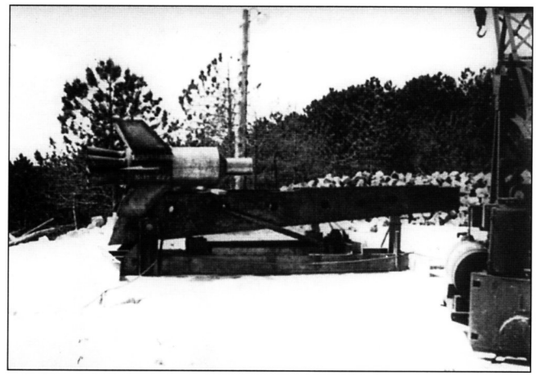
Leba is a seaside resort and 'Klein Peenemünde', the former Luftwaffe experimentation centre, is now open to the public. Remains of an assembly hall, an observation post and a command station can still be seen and a small museum has been opened in the latter building. In the dunes to the west of the compound, Krzysztof Rogala took this picture of an abandoned shelter for a sentry. (K. Rogala)



The best preserved part of the former Luftwaffe firing range is undoubtedly this concrete pit that was once the firing ramp for the Rheintochter anti-aircraft rocket. Developed — as the Rheinbote had been — by Rheinmetall-Borsig, this rocket could carry a 150kg warhead of high explosive up to 15000 metres (50,000 feet). Using optical tracking, the operator guided it by radio signals into a flight of enemy bombers at which point the warhead would be detonated by an acoustic proximity fuse. (K. Rogala)

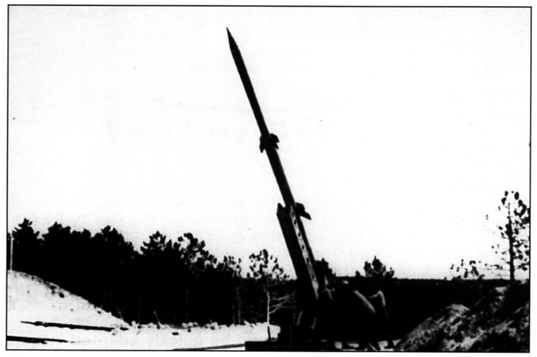


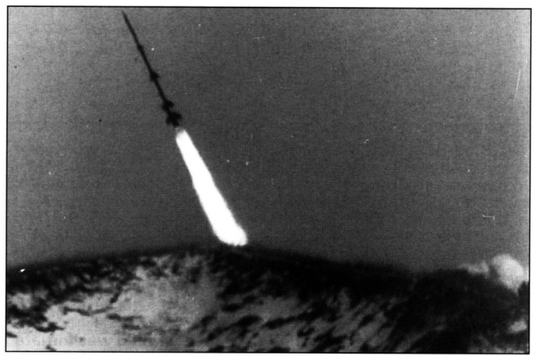
This device which had been installed to measure the speed of the missiles test-fired from Leba was probably also used for the Rheinbote trial launches. (The picture is now available as a postcard at the nearby village of Rabka.)



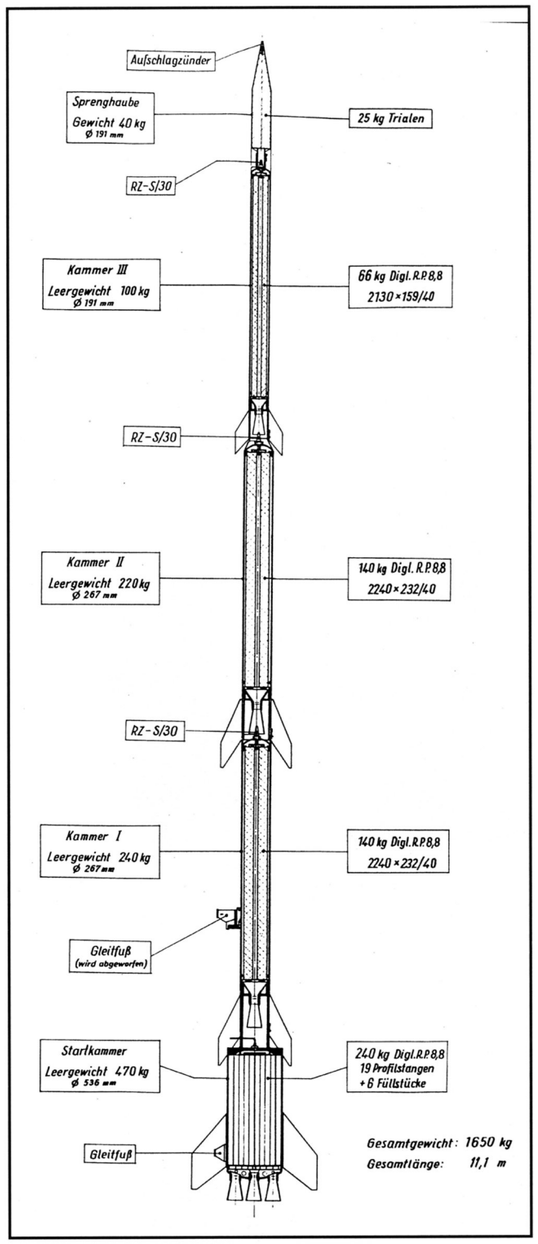
A launching ramp had been specially built at Leba for the firing trials of the Rheinbote. *Left:* The first take-off stage was mounted on the ramp. Note the guide on which the second stage is to be mounted — the cylindrical part of unpainted light alloy in front of it. (IWM) *Right:* The second stage has been fitted while the crane raises the third stage. Note the star-shaped configuration of the six stabilising fins at the rear of this section and the cylindrical guide at the front. (IWM)

***Left:* With the third stage in place, technicians are seen here inserting the cylindrical guide which was the rear of the fourth stage. Obviously, the support equipment available at Leba was makeshift if not crude. The technical team seen at work in these pictures included military personnel from Versuchskommando Tröller and civilian engineers from Rheinmetall-Borsig. (IWM) *Right*: The warhead was already attached to the fourth stage when this was fitted (see picture left), which might suggest that it was not live. Here technicians mount the nose cone of the rocket on top of the percussion fuse. (IWM)**



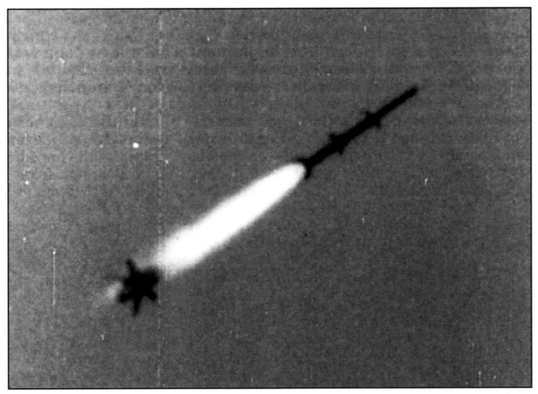


***Left:* With the rocket ready for the launch, the ramp was raised by hand-cranking it up to the proper elevation of 64 degrees which had been calculated as giving the maximum practical range. (IWM) *Right:* From the shelter of a dune some distance away, the cameraman filmed the launch of the rocket which left the ground with a deafening roar trailing a 50-foot sheet of flame. These pictures are stills lifted from German cine films taken during the summer of 1944 when 20 test rockets were test-fired from Leba to help solve the Rheinbote's teething troubles. (IWM)**



The Rh-Z-61/9 — the operational version of the Rheinbote — was 11.1 metres in length and had a weight of 1650kg. For the launch, two sliding clamps (Gleitfuss), one on the take-off stage (Startkammer) and another on the second stage (Kammer I), allowed guidance on the slide-bar of the ramp, the latter clamp falling free when the rocket cleared the ramp. Ignition was by means of an electrical igniter for the first stage, thereafter each of the other three stages were fired by means of a time fuse (RZ-S/30) primed by the acceleration of the take-off. Together with the fourth stage (Kammer III) attached to it, the warhead (Sprenghaube) weighed about 140kg, of which 25kg was Trialen explosive. Detonation of the warhead was initiated by a percussion fuse (Aufschlagzünder). As this 1944 drawing shows, the German engineers did not identify the take-off stage of the rocket as the first stage, hence they named the second stage Kammer I, the third Kammer II and so on. For clarity, we have numbered the four stages of the rocket consecutively.

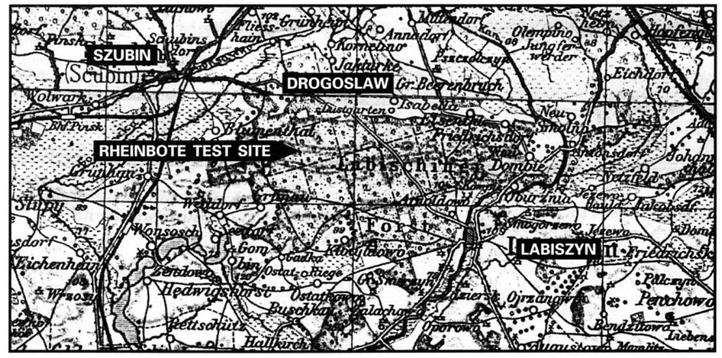
Above: **To obtain maximum power the solid propellant in the take-off stage was cast in separate pieces to give as large a burning area as possible. The exhaust discharged through one central and six peripheral nozzles giving a thrust of about 9800kg (21,000lbs). The first stage burnt only for one second, bringing the speed of the rocket up to 275 metres per second (900 feet per second). This stage then detached to fall some three kilometres down range. In the next three stages, the propellant was shaped in the form of a tube so that burning occurred on the inner and outer surfaces with the exhaust discharging through one central nozzle. The second and third stages each gave a thrust of 5600kg (12,300lbs) for five seconds.** *Below:* **Igniting one second after the extinction of the first stage, the second stage brought the speed of the rocket up to 500 metres per second (1,640 ft/sec). The third stage lit up three seconds after the extinction of the second and raised the speed to 850 metres per second (2,788 ft/sec). Burnt out and discarded, these two stages fell to earth some 10 and 20 kilometres down range respectively. Igniting three seconds after the extinction of the third, the fourth stage gave a thrust of 2400kg (5,280lb) for 3.5 seconds bringing the speed of the rocket to 1330 metres per second (4,360 ft/sec). Stage separation was achieved by inserting a cylindrical guide attached to the rear of one stage into another guide attached to the top of the stage behind it. (IWM)**



Unlike the V1 and the V2, internal guidance and control was not part of the Rheinbote design and the rocket reached its target merely on a ballistic trajectory in the manner of an artillery shell. Hence its precision depended solely on how its course was adjusted at the start so the launching ramp had to be precisely oriented in height and direction. At first, it was intended to use the stable and finely-adjustable mount of a 88mm Flak gun as the base for the Rheinbote launching ramp. However, when it proved impossible to lose the production of even one gun, the Meiller trailer, used to bring the V2 rockets to their launching site and raise them to the vertical, was chosen instead. It was hoped that it could be quickly adapted into an efficient launching ramp for the Rheinbote but it turned out that the chassis and the lever arm were not stable enough to withstand the stresses of the launch of a Rheinbote. Too much vibration occurred which led to considerable inaccuracy and at its maximum range, the lateral deviation of the Rheinbote amounted to some 20 kilometres!

rocket, followed by a two-stage and then three-stage before the Rh-Z-V25 — the four-stage prototype — was finally tested. Rheinmetall-Borsig then finalised the design and in April 1943, the Rh-Z-61/2 — the four-stage rocket in its final form — was demonstrated to Generalleutnant Schneider, the chief of the development branch of the Heereswaffenamt. Three rockets were launched over the Baltic and one was sighted coming down off Bornholm.

The Rheinmetall-Borsig design having proved sound, the Heereswaffenamt agreed to further development although Speer's ministry would not give any priority to the project. To be allocated the required material for the production of 30 rockets, Oberstleutnant Alfred Tröller in charge of the project disguised them under a cover name in the overall V-weapons programme. Nevertheless, it still took more than ten months to get the first batch of the combustion chambers delivered from the Rheinmetall-Borsig factory at Berlin-Marienfelde. By early 1944 Speer's priority rules were applied even more strictly so in April Tröller invoked a further subterfuge. Taking advan-



Although it has been said that Rheinbote trials were conducted from the German town of Waldheim, 30 kilometres north of Chemnitz, we discovered that the relevant Waldheim was actually a small village of Poland! A document dated November 23, 1944, made it clear that Waldheim was '6 km ostwärts Alt-Burgund (Szubin)': hence the correct Waldheim is the Drogoslaw of today, about 20 kilometres south of Bydgoszcz (then Bromberg).

Following the evacuation of the Blizna test site further to the east, a new rocket test range for the V2s was established on the Tucheler Heide (now Tuchola) in Poland where Monika found this piece of rusting equipment *(left)*. **To keep the target area within range, the firing point for the Rheinbote was moved to Waldheim, nearly 100 kilometres to the south of Tucheler Heide.**

Right: **Near Drogoslaw, beyond the road between Szubin and Labiszyn, these are the woods 'südlich Waldheim' from where the engineers of Rheinmetall-Borsig had test-fired Rheinbote rockets in November and December 1944. Nothing solid was built for these tests so nothing remains to be seen. Even the exact launch sites can only be guessed at. (Monika Stranc)**

The Meiller trailer (Meillerwagen or Fahrzeug 102) had been developed for transporting the V2s to their launching site and raising them before launch for which it proved to be a great success. When it was decided to use the Meiller trailer to adjust the direction for firing the Rheinbote, the launching slide-bar was mounted on the hydraulically-adjustable lever arm in such a way that it could be moved 14 degrees on either side. Thus, the rocket could be adjusted in height (by raising the lever arm at a given angle) and in direction (by angling the slide bar on the arm). The first two operational FR-Wagen (FR standing for Fernrakete, long-range rocket) were tested at Waldheim at the beginning of December.

tage of the competition between the army and the SS, he told his chief, Generalmajor Hüther (promoted to that rank in March), that the SS ordnance department was interested in the Rheinmetall-Borsig solid-fuel rockets. Hüther immediately turned to General Friedrich Olbricht, the head of the general army branch, and to Generaloberst Fromm, the director of army equipment, both well-known for their opposition to the SS's push for power. They immediately gave their support and 200 Rheinbote rockets were ordered for military deployment. To this end, the programme was allocated 150 tons of powder, 250 tons of steel and 30 tonnes of non-ferrous metal. A Versuchskommando Tröller (Test Command Tröller) was also set up to supervise development and production.

There were still some problems with unexplained airbursts of the rocket, faulty powder burning in the fourth stage, and stabilising fins breaking off when the rocket broke the sound barrier, so experts from the Luftfahrtforschungsanstalt (LFA — Air Research Institute) in Braunschweig were called in. With the help of wind-tunnel experiments and 20 test launches from Leba in the summer, the causes of the troubles were progressively identified and by August 1944 most of Rheinbote's teething troubles had been solved.

The first rockets of the pilot production batch, the type Rh-Z-61/9, left the Berlin-Marienfelde factory in October and one of them fired from Leba reached a distance of 157 kilometres at the end of the month.

On the morning of November 15, four Rheinbote rockets were demonstrated to SS-Gruppenführer Kammler, Generalmajor Dornberger and experts from the Heereswaffenamt and the Waffen-SS. The first three rockets behaved perfectly and Bornholm signalled that the ranges achieved were 153, 155 and 157 kilometres, respectively. However, when the fourth was launched, there was a problem with the clamps guiding the rocket on the launching rail which broke one of the stabilising fins. As the rocket rose vertically into the air, Dornberger said, 'we ducked involuntarily in our narrow trench. The different stages were bound to fall on top of us. After the first three stages had dropped among the pines without doing any damage, we waited for the fourth and last. It contained a live warhead. Splinter effect might be dangerous. In a few minutes we heard the whistle of the falling charge and shortly afterwards its impact on the left flank of the battery. The detonation did not seem very loud. Nothing serious had happened. When we reached the point of impact we looked at each other in astonishment and some embarrassment. A small, shallow crater 1,2 metres wide had been made in the loose sand. Little or no splinter effect could be traced. Such was the insignificant result of burning 580kg of powder and hurling one ton of steel!'

Kammler and Hüther overruled Dornberger's realistic assessment and the military deployment of the Rheinbote rockets was agreed. On November 29 Kammler ordered that allocation of powder to the programme be increased.

With the support of the experts of Versuchskommando Tröller, the engineers of Rheinmetall-Borsig worked hard to perfect the rocket and in December more trial firings were carried out at Leba and Waldheim (now Drogoslaw in Poland, six kilometres east of Szubin). Waldheim was actually an annex to the new rocket test range established on the Tucheler Heide (Tuchel Heath), 15 kilometres east of Tuchel (now Tuchola) in Poland, in the summer of 1944 for further development of the V2 after the Russian offensive had put an end to development work at the test site at Blizna, further to the east. From Tucheler Heide, the V2

From the experience gained at Leba and Waldheim, a comprehensive set of instructions was prepared for the crew of Artillerie-Abteilung 709. This 125-page document detailed every aspect of the employment of a Rheinbote battery — from the assembly of the various stages to the orientation of the ramp in direction and height and the firing. To service one 'gun', there were to be eight gunners in addition to the crew chief and to detail their role and duties, the instructions named them K1 to K8. As to the mounting and assembly of the various stages of the rocket, the document gave the following details: Having unpacked the second stage from its crate, K5 and K6 fastened a strap to it. Meanwhile, from behind the ramp, K4 put a wood trestle on the slide bar. K1 winched down the hoist, K5 hooked the strap and K1 winched the second stage up. He set it just behind the ramp with the sliding clamp in line with the slide bar. Under the command of K4, K2 and K3 inserted the clamp into the slide bar and pushed the stage up along the bar until it rested onto the wood trestle. K1 unhooked the hoist and K3 turned the crane arm aside. K4 inserted a shaft into the slide bar until it hit the sliding clamp. While K4 pushed the clamp with the shaft, K2 and K3 had the stage slid up the bar for about 60 centimetres. . . . Having unpacked the take-off [first] stage from its crate, K7 and K8 fastened a strap to it. K1 winched down the hoist, K8 hooked the strap, K1 winched the stage up and moved it behind the slide bar, in line with it. Under the command of K4, K1 lowered the stage and K3 and K4 inserted the sliding clamp into the slide bar. The take-off stage was then pushed up along the bar until the clamp reached the proper position. K2, K3 and K4 then slowly pushed the second stage backwards until its rear cylindrical guide inserted into the one in front of the take-off stage. 'The two lugs in the latter must fit into the two grooves in the second-stage rear cylindrical guide.' The second stage was then pushed into the take-off stage cylindrical guide until the two spring bolts caught in. . . .

This done, K5 and K6 unpacked the third stage and fastened a strap to it. K1 winched down the hoist, K5 secured the strap and K1 winched it up. It was moved and set so that K3 and K4 could insert its rear cylindrical guide into the one in front of the second stage. 'The markings on the two stages must fit. K3 and K4 have the two spring bolts catch in.' The fourth stage is mounted in the same way. 'The fitting of the warhead must be done with the greatest care. Beforehand, it must be checked that the safety pin is still set into the fuse. K6 and K7 take the warhead on the munitions truck and cautiously bring it to the gun.' K5, who had climbed on the ramp, then carried the warhead on his shoulder and K6 and K7 adjusted it onto the fourth stage. . . . The elevation of the ramp was trained by K3. Having first set the given elevation on the gunner's quadrant, K3 put the quadrant on the launching rail. 'With hand signals, K3 indicates to K5 whether the ramp should be raised or lowered. K5 raises or lowers the ramp by actuating the hydraulic hand pump, this until the clinometer of the quadrant is level. . . .' To aim the gun in the proper direction, the crew needed precise setting and to the command: 'Richtkreis rückwärts des Geschützes!' (Bring the direction of fire back to the gun!) K5 then went to the survey and computing team. He wrote the number given to him on a slip of paper and brought it back to K1. K1 set this number on the laying device and balanced the cross level. Turning the traversing handwheel, he then oriented the launching rail until the vertical cross-wire matched with the red mark of the aiming post. 'The matching of the cross-wire with the aiming post must be done three times at least for the laying device moves when the rail is adjusted.' When the rail was precisely trained, it was fixed in position and K1 reported to the gun chief: 'Geschütz eingerichtet!' (Gun aimed!) . . . When the gun was trained, the gun chief shouted: 'Räumt Feuerstellung!' (Evacuate the firing position!) K2, K3 and K4 moved away about 50 metres to the left, K5, K6, K7 and K8 did the same on the right. Together with K1, the gun chief checked that all parts of the laying equipment had been removed and that nobody remained near the ramp. He then ordered: 'Zündleitung anschliessen!' (Connect the firing cable!) K1 connected the firing cable to the wires reaching out of the take-off stage. This done, he shouted: 'Geschütz feuerbereit!' (Gun ready to fire!) Both went to the foxhole in which the firing apparatus had been set. Having checked the electrical continuity, K1 connected the firing cable to the exploder. 'Before that, he must check that the safety key is not inserted into the exploder. He must always carry this key on him and it is just before the fire that he inserts it into the exploder.' To the order of the gun chief, 'Geschütz Feuer!' (Fire the gun!), K1 turned the exploder key and fired the rocket.

rockets were being fired in a southerly direction, the target area being seemingly a training range in the Warthe valley. That distance was too far for the Rheinbote so to shorten the range the firing point was moved to Waldheim, nearly 100 kilometres to the south of Tucheler Heide. On December 13, after the launch of 36 test rockets, engineers from Rheinmetall-Borsig reported: 'Failures amounting to 50 per cent still have to be expected. . . The intended range of 160 kilometres will surely be achieved.'

As far as the destructive power of the warhead was concerned, one rocket launched from Waldheim which crashed into a farmyard gave a more reassuring picture after the disappointing experience of November 15 at Leba. The crater was reported as being 3.5 metres in diameter and 1.2 metres deep and the surrounding buildings showed heavy damage to the walls. The roof of the stables, 15 metres from the point of impact, had been completely blown off; the roof of a barn 50 metres away had partially been ripped off and that of the farmhouse, 350 metres away, heavily damaged. All the poultry and the farm dog had been killed and two cows injured.

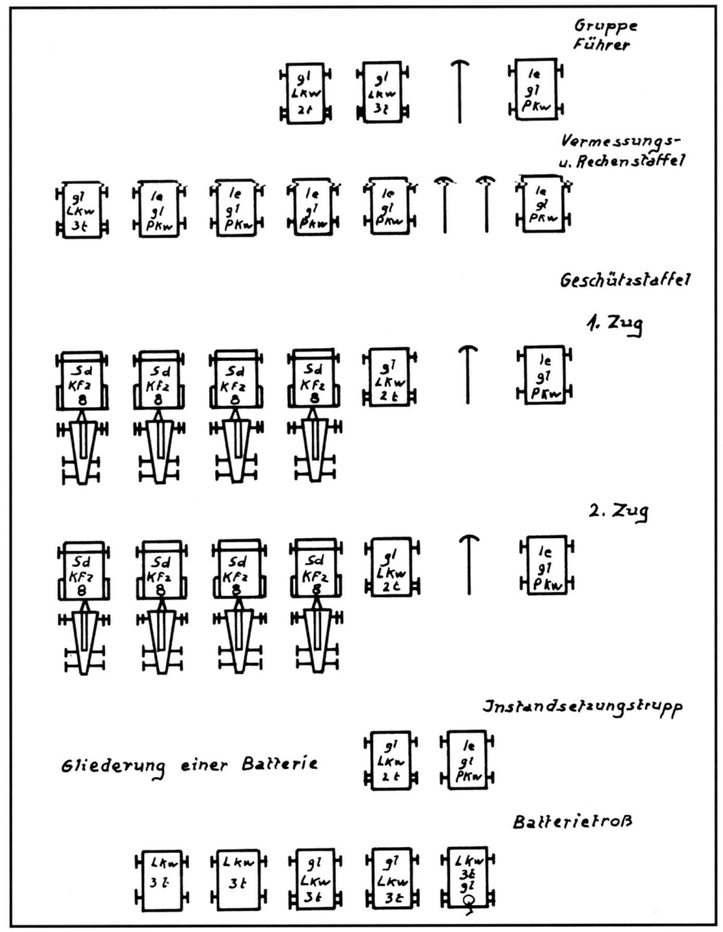
However, the Rheinbote was still not 100 per cent reliable, and the time fuses which had to ignite the various stages at the proper time were particularly troublesome. In a series of tests at Waldheim between December 1-17, 12 rockets were launched of which only four ignited properly; five failed and the whereabouts of three had not been traced when the report was written. The greatest range achieved was 194.2 kilometres, with a lateral deviation of 20.9 kilometres; the shortest 45 kilometres, with a deviation of 7.5 kilometres.

Following Kammler's order of late November for the first batch of 300 rockets, 115 units had been produced by December 12. In addition, another 222 rockets were scheduled to be delivered by the end of January.

In the meantime, Tröller had shaped his Versuchskommando into an operational unit, the officers being trained with the rockets at Leba and Waldheim and the men being instructed at the Rheinmetall-Borsig production plant at Marienfelde. For operations in the field, the Kommando was formed into Artillerie-Abteilung 709, actually with only one battery, and on December 12, it was moved by rail to its operational area in the West.

Assigned to Kammler's Division zV, Artillerie-Abteilung 709 received the order to bombard Antwerp and it set up its launching site in a wooded area at Nunspeet, some 25 kilometres west of Zwolle, in the Netherlands, some 165 kilometres from the target. According to a report dated December 13, there were then only four Startbahngeschütze (launching ramp vehicles) to hand although none were serviceable as some vital components were still missing.

These were finally delivered and Artillerie-Abteilung 709 opened fire on December 24. Oberstleutnant Tröller reported: 'The firing sites, carefully camouflaged against view from the air and spread out widely, were located in the approaches to the V2 division. Nearby, 24 rockets were stored in the open, also spread out, in readiness. Each launching site was assigned to an officer. They could hardly believe their ears when they were informed that action was becoming serious. Excitement with the officers and crews was only small. They knew that nothing could go wrong, as they were very familiar with the rocket. The distance between Nunspeet and Antwerp amounted to 165 kilometres. According to provisional firing procedures — no firing table had yet been developed — the raising for this range was 64 degrees. . . . The Startbahnen headed towards the port of Antwerp. At 12 a.m. precisely, the first salvo



The detailed instructions also outlined the composition of a Rheinbote battery which would consist of a battery staff with a communication section, a survey platoon, two weapon platoons, each with four FR-Wagen, a maintenance section and a combat train. The battery comprised 28 vehicles and five motorcycles (the arrow-like symbols). The vehicles included 11 lorries (Lkw), nine personnel carriers (Pkw) and eight SdKfz 8 half-tracks to tow the FR-Wagen. In the event, when Artillerie-Abteilung 709 went in operation in December, it had one battery with only one weapons platoon.

Powerful half-track prime-movers were needed to manoeuvre the heavy Meiller trailers (nearly 12 tonnes when a rocket was transported). Here, an FR-Wagen is being towed into position by an SdKfz 7 half-track at Waldheim during the operational training of Artillerie-Abteilung 709.

By mid-December, Artillerie-Abteilung 709 had set up its rockets in a wood near Nunspeet in the Netherlands. The target was Antwerp, 165 kilometres away. Although these pictures were taken at Waldheim during trials earlier that month, they still give a good idea of how the German rocket detachment would have emplaced its launchers in Holland following the directions as to how to deploy in a wooded area to hide against aerial observation.

of four rockets started off without trouble. Within one hour, all 24 available rockets had been launched towards Antwerp. . . I have ordered the officer in charge of each site to test the rockets which were launched from his site as to the perfect function of the units. In other words, to note the typical three sounds which should be heard after 2, 10 and 22 seconds. The reports from each firing site indicated no failures.'

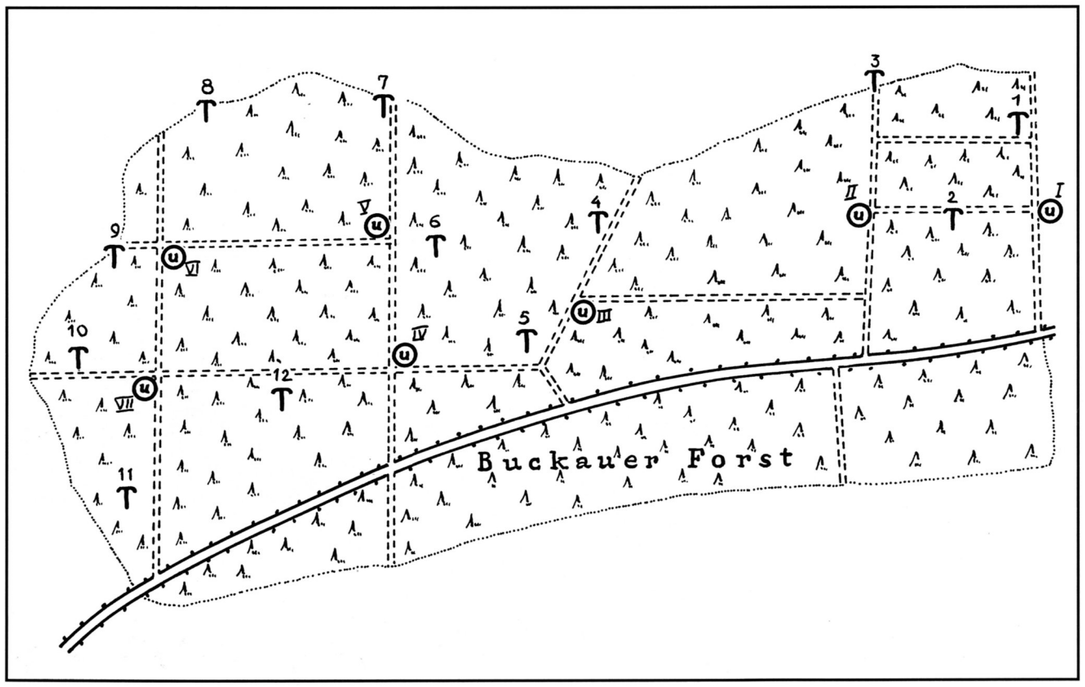
Tröller and his men had launched an additional 20 Rheinbote rockets by the middle of January. (Some sources give higher numbers, up to a total of 200 rockets, but these figures seem implausible). When all the available rockets had been fired, Artillerie-Abteilung 709 was withdrawn back to Tucheler Heide.

There, Tröller met the team from Rheinmetall-Borsig, which had in the meantime carried out additional trial launches from Waldheim for the setting up of a firing table, who told him of a surprising increase in range. According to the new data, when fired at an elevation of 64 degrees the Rheinbote rockets averaged a range of 230 kilometres. However, no one at Rheinmetall-Borsig had known where Artillerie-Abteilung 709 was operating so this vital information could not be passed on to Tröller. When the Rheinbote rockets at Nunspeet were fired at Antwerp at an elevation of 64 degrees they may have overshot their target by over 50 kilometres, possibly impacting somewhere between Ghent and Aalst.

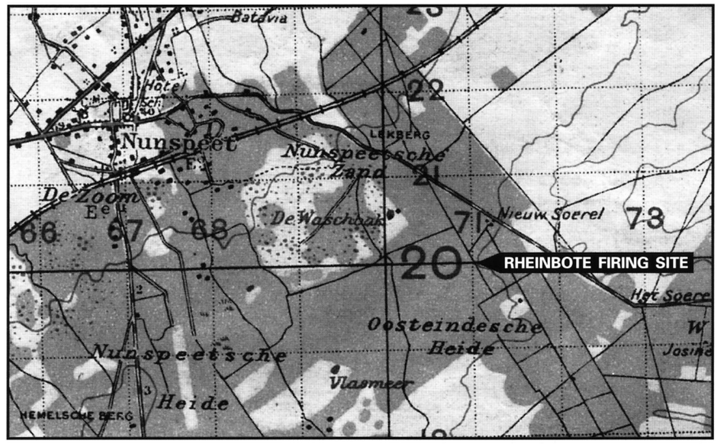
The first production of 1,000 rockets was planned to begin in December, in two monthly production runs of 500 each. This would permit 450 rockets to be available per month to be launched in operations while the remaining 50 were to be set aside for further development and testing but because of a lack of materials and powder, these plans proved illusory. On January 15 the scheduled monthly production for February had to be reduced to 150, of which 60 were to be reserved for development, leaving only 90 rockets for deployment. The production for March was set at 150, 30 rockets being earmarked for development.

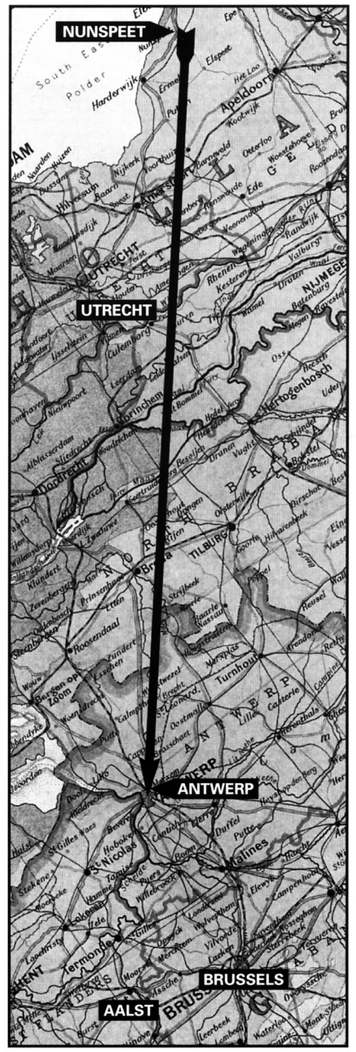
However, the Rheinbote was still far from being reliable enough for operational deployment as reported by Major Axster of BzbV Heer on January 14: 'Further investigations have revealed that failures at the last trial firings were caused by problems with the time fuses. BzbV Heer and WaPrüf 11 have already taken the necessary measures to ensure that, starting with the next test-firings, only new faultless fuses will be used.'

Yet it was now too late to perfect a weapon of doubtful effectiveness and on February 6 Kammler ordered all work on the Rheinbote cancelled.



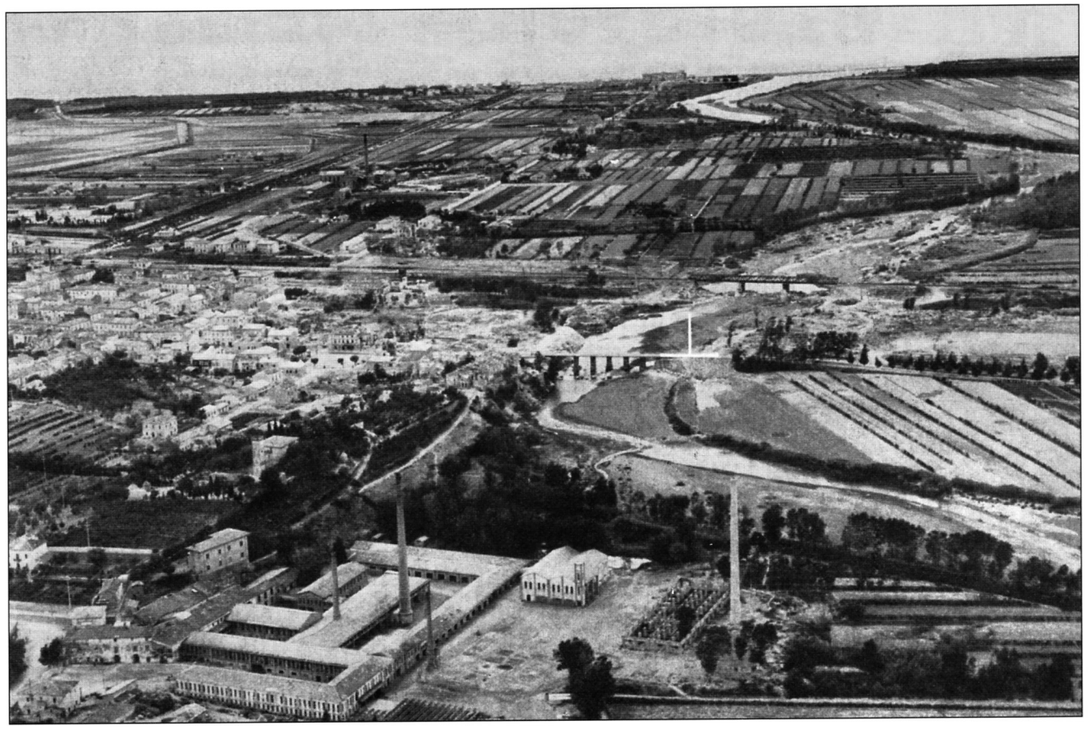
In this sketch reproduced from the 1944 document, the battery was shown completely equipped with three weapon platoons — hence a total of 12 FR-Wagen (numbered from 1 to 12) — hidden in position in a forested area. At Nunspeet, Artillerie-Abteilung 709 had only four FR-Wagen. This drawing also indicates seven widely separated unloading spots (U for Umladestellen, numbered from I through VII) where the parts of the rockets were delivered in crates.





In 1986, the late Bart Vanderveen, Editor of *Wheels & Tracks*, managed to trace Gerrit Karsten who had watched the men of Artillerie-Abteilung 709 as they operated the Rheinbote rocket against Antwerp in the winter 1944-45. By then, Mr Karsten was living with his family at the Nieuw Soerel farm, a few kilometres east of Nunspeet *(above)*. 'Early in November 1944, the Germans ordered us to evacuate our home and property within two days. The whole area became out of bounds and German troops started preparations at four sites, two pairs about 70 to 80 metres apart. Many trees were felled to create openings for the mobile launchers to move into and out of position and more were cut down to facilitate negotiating several sharp bends. The missiles were delivered on long trailers and went along gravel roads and dirt tracks past the farmhouse into the woodlands behind it. Although nobody was allowed anywhere near the place, in January 1945 I managed to get permission to go into the vicinity with horse and cart to collect a load of firewood. Accompanied by an armed guard, I succeeded in getting quite near the launching site and through the trees I saw one of the rockets on its ramp. When the guard noticed my interest I was told not to look in that direction again and to hurry loading the timber and leave'. *Right:* The 165-kilometre trajectory of the Rheinbote launched from Nunspeet. Fired at an elevation of 64 degrees above the horizontal, the rocket achieved an altitude of 65,000 feet after 31 seconds of flight, climbing at a speed of 3,800 feet per second. Two minutes after the launch, it had reached the top of its ballistic trajectory at an altitude of 186,000 feet and its speed was 2,500 feet per second. Some 230 seconds after its launch, the warhead crashed on its target. Unfortunately there is no record of the impact points of the rockets fired from Nunspeet and it is not even known if they landed in Antwerp or overshot their target, crashing near Aalst. Coming at a time when V1s and V2s were regularly hitting Antwerp and its suburbs and errant V1s were crashing all over the countryside, it appears that the impacts of the small Rheinbote warheads went unnoticed. Peter Taghon searched the Belgian Gendarmerie files of the V-weapons incidents in Flanders for us and traced 18 for December 24, the day of the Rheinbote first salvoes. However he said that these reports do not differentiate between V1s and V2s, let alone the Rheinbote and, of the 13 incidents reported for that afternoon (the Rheinbote were fired from midday), all were in the Antwerp area. The one exception, a major incident in Kalken at about 4.30 p.m., must be a V1 because the size of the crater — 15 metres in diameter and five metres deep — excludes the Rheinbote.

The Germans stayed at the Nieuw Soerel farm until shortly before the Canadians arrived in April 1945. Mr Karsten: 'As soon as the area was considered safe, the farm was ransacked by Dutch civilians who took anything they could put to use. When I returned to my house, the place was in a shambles and there was a lot of abandoned equipment, including numerous rifles which had been smashed to pieces against a tree. I visited the launch site and noticed damage to the surrounding trees, the bark being badly scorched to a height of over two metres. There were also craters in the ground.' Unfortunately the Nieuw Soerel farm was demolished in the mid-1960s and a dirt road has since been built across the area. New trees have been planted so the exact launch site could only be pinpointed with Mr Karsten's help. *Left:* This is the road to the launch sites beyond the spot where the farm once stood. *Right:* Mr Karsten points out the position of one of the launch pads to Bart Vanderveen.



On July 1, 1944, a stiff battle took place for possession of Cecina, an Italian town on the coastal road between Rome and Livorno. An important road and rail centre, Cecina had suffered numerous Allied bombing raids and, by the time the land battle reached the town, much of it was in ruins and both the road and railway bridges over the Cecina river were destroyed. This American aerial photo of Cecina is looking south-west, with the Mediterranean on the horizon. The brick factory from which the final German counter-attack on the evening of July 1 was launched is visible in the foreground.

THE BATTLE FOR CECINA

By Robert Holt and Daniele Guglielmi

Cecina is a coastal city 35 kilometres south of the key port of Leghorn (Livorno) on Italy's west coast. It is a relatively modern city, having been founded in the mid-1800s when extensive marshlands in the area were drained. In 1944, Cecina remained interlaced with small canals and ditches, and contained numerous olive groves, vineyards and open fields. Near the sea were pine groves and sand dunes. High ground lay to the east.

Because it was a major road and rail centre the town had been the target of some 21 bombing raids during the seven months that preceded the ground battle. The first of these occurred on November 4, 1943 and the last on June 8, 1944. The majority of these missions were conducted in daylight by medium and heavy bombers of the US Twelfth and Fifteenth Air Forces, although night bombing raids by British Wellingtons and strafings by British and American fighters also took place. The key objectives of these raids were the rail bridges, tracks and marshalling yards, roads, road bridges, and a factory to the east of the town.

According to local records, the Allied air attacks not only took out their main targets, but also destroyed or damaged over 300 houses, buildings, and small factories causing virtually the entire civilian population to flee into the surrounding countryside.

Recognising the strategic importance of the area, the Germans had fortified the coast from Piombino to Livorno during the spring of 1944. Fourteen bunkers were installed between Vada and Marina di Cecina, the latter being the part of Cecina along the seaside, separated from the centre of the town. At least two of these bunkers, one in Vada and one in Marina di Cecina, were topped with a Panther turret and intended to be used as coastal defences. The bunkers in and around Cecina were built by Italian farmers who were impressed by German soldiers. The Germans also built an important air defence radar system near a farm in the hills of Ladronaia.

The Germans had decided to use Cecina as a strong point at the end of their defensive line (Cecina-Riegel), using the hills to the east and the Cecina river as natural obstacles. After the fall of Piombino on June 25, the 14. Armee recognised the danger posed by the US IV Corps moving up the coastal roads, and ordered its units to stop the advance. The defence of Cecina was assigned to the 16. SS-Panzergrenadier-Division 'Reichsführer-SS' and the 19. Luftwaffe-Feld-Division.

The men of the 16. SS-Panzergrenadier-Division were young and not all were volunteers, but they were expertly trained and ready for combat. The division had lost many men and much equipment in the weeks prior to Cecina, and had become battle-hardened. The division rapidly prepared its defences which consisted of a series of forward observation and machine-gun positions and an assembly line in the rear. Mortars, machine guns and anti-tank guns were carefully concealed in the pine forests on the outskirts of Cecina and in the hills to the east. A heavy belt of mines was laid around the town. The infantry was well protected by the thick stone walls of the country buildings.

The 19. Luftwaffe-Feld-Division had hurriedly arrived in Italy from Belgium at the end of May and was made up of well-trained and well-armed ex-Luftwaffe personnel. However, the division experienced terrible losses in June due primarily to Allied air superiority. Some battle-weary battalions from the 162. (Turkmenische) Infanterie-Division were also moved to the highland positions east of Cecina.

Total artillery strength supporting the German divisions consisted of 16 88mm Flak guns; two German 100mm and 27 Italian 105mm guns; 35 German 105mm, nine Soviet 122mm, 11 German 150mm and eight Italian 149/19 howitzers; 12 Italian coastal guns (eight 90/53, two 100mm, and two 120mm), and eight French long-range railway guns (six 194mm and two 320mm). However, ammunition supplies were very low for most of these guns.

Right: **The Allied attack on Cecina was part of US Fifth Army's drive from Rome to the Arno river. Opposing the Americans was the LXXV. Armeekorps of the German 14. Armee. Assigned to defend the Cecina sector were the 16. SS-Panzergrenadier-Division and the 19. Luftwaffe-Feld-Division.**

The 16. SS-Panzergrenadier-Division was supported by schwere Panzer-Abteilung 504, an elite unit equipped with Tiger tanks that had just arrived from France. From June 21 this battalion fought north of Grosseto. It inflicted considerable damage on some American units but lost 27 of its tanks, mainly due to mechanical troubles. It was difficult to recover the immobilised vehicles in the narrow Italian roads especially because of the constant bombardment by Allied aircraft and artillery. For this reason, these Tigers were self-destroyed. Of the 18 surviving at the end of June, nine were in the workshops in Pomarance and Pisa.

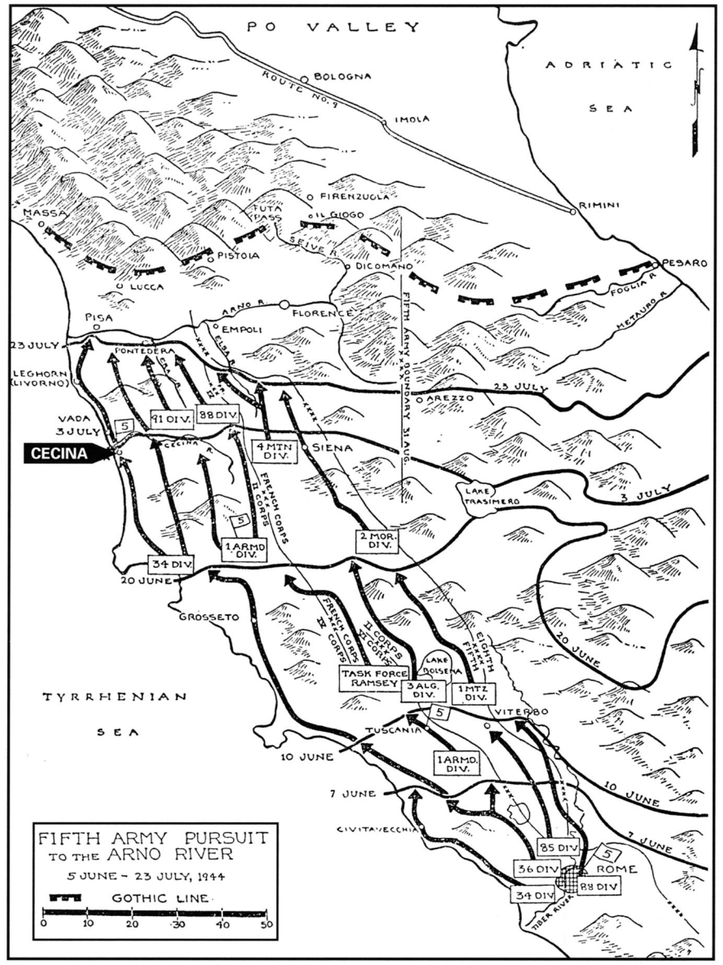
In order to escape enemy observation the Germans conducted all of their major troop movements during the night. Engineer troops built a wooden bridge across the Cecina near Steccaia.

DAY ONE — JUNE 29

The battle for Cecina was a fiercely-fought, rapidly-shifting series of attacks and counter-attacks, beginning on June 29 and ending on July 2, 1944. The weather during this period was clear, hot and dry, and visibility was excellent. Consistent with previously observed tactics, the Germans made maximum use of the town of Cecina, and the Cecina river was used as a natural defensive obstacle.

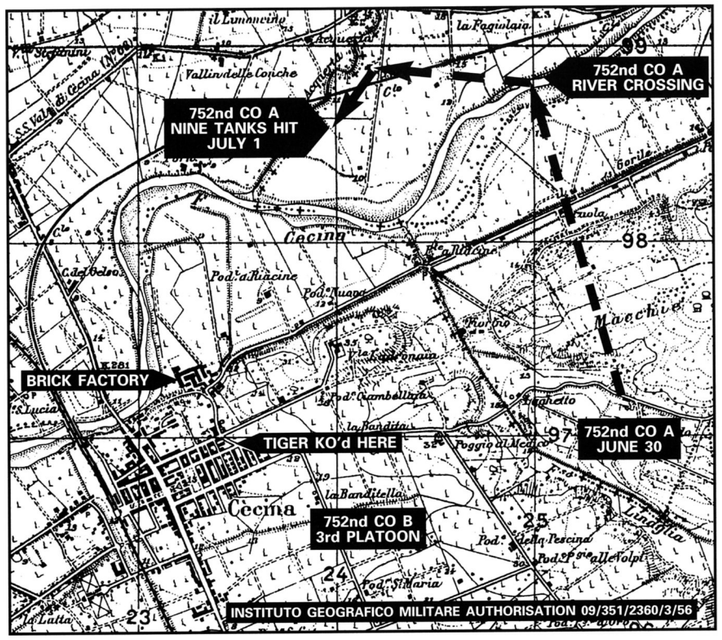
At 0600 on June 29, the 133rd Regiment of the US 34th Infantry Division began its push from several miles south of Cecina. They moved rapidly up along Route 1 (the ancient Roman Via Aurelia), which was the main coastal road running through Cecina. Further to the east, the 135th Regiment passed through the 442nd (Nisei) Regiment, and continued to drive northward with little resistance. Still further inland, the 168th Regiment pushed northward in an attempt to block a potential German counter-attack from the east along Route 68, a major east-west road that cuts Route 1 just north of Cecina.

The 133rd Infantry experienced almost negligible contact, taking Stazione di Castagneto during the morning. Company E got their first glimpse of Cecina as they moved to a hill mass near Castagneto, about two miles south of there. The town of Bibbona was next to fall, again with little resistance.



The Germans began blowing bridges ahead of the Americans during the morning. A motorised patrol from the 34th Division was sent from about four miles south of Cecina and reported no contact with the Germans. However, the patrol was warned by civilians that the enemy planned to defend Cecina, and that the town was surrounded by a solid belt of mines. The civilians reported that the only route into town was a path through the 1st Battalion sector west of Route 1.

Left: **Officers of the 16. SS-Panzergrenadier-Division in Cecina, preparing for the defence of the area. L-R: SS-Obersturmführer Gerhard Shirmer (SS-Artillerie-Regiment 16), SS-Obersturmbannführer Martin Stange (commander of the same regiment), SS-Sturmbannführer Josef Maier (commander of SS-Panzer-Abteilung 16), SS-Hauptsturmführer Hans Günther (leading the II. Abteilung of SS-Artillerie-Regiment 16) and SS-Obersturmführer Karl Schwarzmeier (commanding 1. Kompanie of SS-Panzer-Abteilung 16). A Kübelwagen (with the unit badge) and Schwimmwagen stand by.** *Right:* **The same house still stands on a side road of the Via Aurelia, two kilometres north of Cecina. It was slightly modified in the 1970s.**



The mission of capturing Cecina was given to the US 34th Division. Supporting the 34th was the 752nd Tank Battalion. The map shows that unit's movements on June 30-July 1 and the location of the Sherman-versus-Tiger encounter.

As the 133rd Infantry approached Cecina, the 2nd Battalion was on the right, and the 1st Battalion was slightly behind on the left. By 1500, the regiment had come under small-arms fire. German resistance intensified, as the defenders made good use of mortars, self-propelled guns, pillboxes, and dug-in gun emplacements. The 133rd was slowed considerably by the enemy's coastal defences being directed toward the south. Company E called for armoured support, and tank destroyers from the 804th Tank Destroyer Battalion moved up to assist.

Company A of the 752nd Tank Battalion was attached to the 34th Division at 1600. Moving out along Route 1, it joined elements of the 34th at 2000 that evening in Bibbona. The rest of the 752nd moved out from Massa Marittima at 1800 and went into bivouac in the vicinity of Monteverdi at 2100, waiting for combat assignments. The battalion was in good mechanical shape, having just replaced 14 engines, and with most (but not all) tanks exchanging their steel tracks for rubber.

The I. Bataillon of Panzergrenadier-Regiment 35 defended the Via Aurelia and faced the 34th Division's main attack. The II. Bataillon was positioned to the left and the III. Bataillon to the right, near the seaside. The 16. SS-Panzergrenadier-Division used its available armoured vehicles, which included 13 StuG III assault guns of SS-Panzer-Abteilung 16 and of 1./SS-Panzerjäger-Abteilung 16. The Germans also employed six Marder III tank destroyers of 3./SS-Panzerjäger-Abteilung 16. Another 11 StuGs and two Marders were under repair in the workshops. Meanwhile, the divisional engineer companies were building another defensive line at Rosignano, north of Cecina.

At 2100, the 2nd Battalion of the 133rd Infantry was counter-attacked by self-propelled guns and mortars from west of Route 1 but after a heavy fire-fight, the attack was repulsed with well-placed artillery fire. The 2nd Battalion expended almost all of its ammunition during this action. The Germans reported heavy fighting and losses, as well as the capture of two Americans.

DAY TWO — JUNE 30

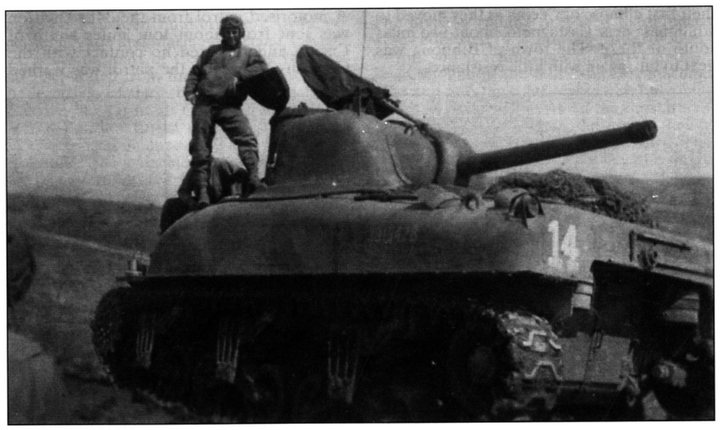
In the early hours of June 30, the 3rd Battalion of the 133rd resumed its attack along Route 1, the only road in the area that was wide and in good shape. Company K, in the lead, was badly cut up in an ambush in the orchards and vineyards. After briefly halting to reorganise, the 3rd Battalion continued its attack at 0500. The jump-off point was the junction of Route 1 and the road leading to Bibbona, about 1,500 yards from the southern edge of Cecina. This attack was supported by the 2nd Platoon of Company A, 752nd Tank Battalion. The approach to Cecina proved heavily mined, just as the Italian civilians had warned earlier.

The 133rd continued to meet steadily increasing opposition, and the advance was extremely slow. The 3rd Battalion reached a point about 300 yards south of Cecina at 1330, where they met strong small-arms and mortar fire from the town and from both flanks. Tigers of schwere Panzer-Abteilung 504 were brought into the action. The German tanks advanced under reconnaissance by fire procedures, pumping rounds into every house, building and US position they spotted. However, they directed very little fire upon the attacking infantry platoons.

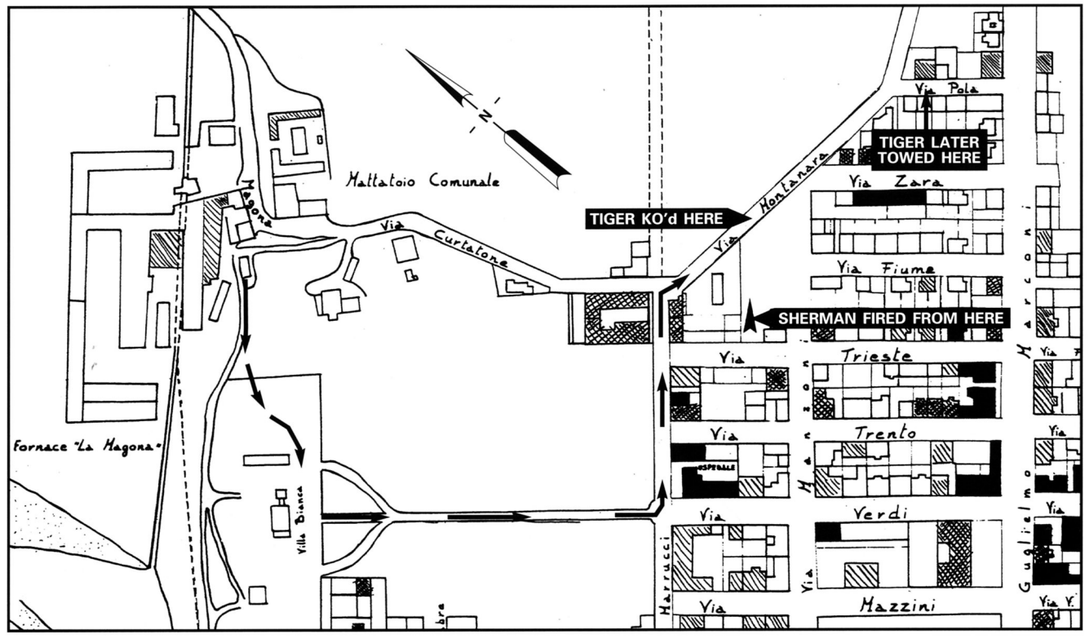
At 1500, the 3rd Battalion was heavily counter-attacked from the west, being nearly cut off from the rest of the regiment. The 133rd Infantry suffered heavy casualties and two tanks of Company A of the 752nd were lost to Panzerfausts and anti-tank grenades. The infantry and remaining tanks were forced to withdraw to a position that was just north of the road juncture from where they had begun the attack earlier in the day. Later, heavy artillery protective fire halted the German attack. Company A of the 752nd was then moved east in support of the 135th Infantry. To stop the Americans, the Germans had used up their last reserve, the SS-Begleit-Kompanie 16.

Company F of the 133rd approached the eastern edge of Cecina while Company E reached the high ground further on the right. The commander of Company E requested permission to dig in in a blocking position to protect the battalion's flank, and also that Company G be sent to shore up defences in that area. The request to dig in was denied, and instead Company E was ordered to move all the way to the lowland loop of the Cecina river. The river area was flat and undefendable, with bull rushes obstructing their vision, and little possibility of tank support. The regimental commander, Colonel William H. Schildroth, did agree to send Company G to fill in the gap between E and F and then make an assault on eastern Cecina.

At 1800, the 1st Battalion of the 133rd started an attack to the north-west to cut Cecina off from German elements operating to the west of town. After inching its way forward for nearly three hours, the battalion had captured six enemy guns, but was not able to break the German line south of Cecina. The 2nd Battalion continued its attack from the south-east, but was held up by intense mortar and machine-gun fire.



The 752nd Tank Battalion was equipped with M4A1 Shermans. This 752nd tank, No. 14 of the 3rd Platoon, was destroyed by the Germans along the Via Prenestina on the outskirts of Rome on June 4. Standing next to it is the driver, Sergeant Raymond Holt, who along with the recently promoted Lieutenant Cox selected a replacement M4A1 in a depot the following day. This became Sherman No. 11, which three weeks later fought the Cecina action. (No. 11 signified the first tank of the 3rd Platoon. The 1st Platoon had 1-5, 2nd Platoon 6-10, and 3rd Platoon 11-15).



The final German counter-attack on the evening of July 1 was launched from the 'Fornace La Magona' brick factory. The combined German tank/infantry force moved past the Villa Bianca to the Via Marrucci at which point it turned north and then east into Via Montanara. (The map also shows the destruction wrought by the air and artillery bombardments. Black denotes complete destruction and the shaded areas heavy or light damage.)

At 1900, the tanks from Company A of the 752nd reached the 135th Infantry and attempted to join in the attack to the north and north-east. Although elements of the regiment had crossed the Cecina as early as 1330 that afternoon, the tanks were unable to follow them. The river was easily fordable with barely a trickle in most places, but heavy German fire from the high ground pinned the tanks down. The 752nd tanks supported the 135th by fire from south of the river until dark.

At 2330, Company B of the 752nd was attached to the 133rd Infantry, and moved out to join them three kilometres south of Cecina at 0400 on July 1. By midnight, the 34th Division had all its battalions in action but was still 1,000 yards east of Cecina and considerably farther to the south.

DAY THREE — JULY 1

Around 0400, the 133rd launched an all-out attack to the north and north-west, the plan being to go around the town and cut off the enemy. The regiment met fanatical resistance from the III. Bataillon of Panzergrenadier-Regiment 35 which provided intense small-arms, machine-gun and artillery fire. The 133rd was completely unaware that the Germans were preparing to withdraw the next day. The 3rd Battalion arrived at Marina di Cecina by the mouth of the river without encountering many Germans, but was then stopped by the heavily mined ground. By 0630, the 2nd Battalion reached the river on the regiment's right flank. At 0700, the tanks of Company A of the 752nd finally succeeded in crossing the river to rejoin the 135th Infantry, turning west and taking up positions north-east of Cecina at 0830.

Company G of the 133rd, which had previously been ordered to fill the gap between Companies F and E, was held up by small-arms fire, and ordered to halt their attempt to reach Company E. This was because by noon the action was broadening in such a way that the company could not advance without bypassing large German pockets.

At 1400 hours, Company A of the 752nd resumed the tank/infantry attack to the east of Cecina, the objective being the important road junction of Routes 1 and 68. However, about 300 metres east of there, at the Sirigatti farm near the Acquerta stream, the tankers ran into heavy fire from anti-tank weapons that were carefully concealed at Villa Cartoni just north of Route 68. Five of the Shermans received direct hits and were set on fire, and four more were immobilised although only three tankers were wounded. The two remaining tanks withdrew south of the river with the infantry. Three of the four immobilised tanks were put back into operation, but not until the morning of July 2.

The eastern outskirts of Cecina were held by the I. Bataillon of Panzergrenadier-Regiment 35, which had been ordered to defend the area until July 2. They succeeded in repulsing some of the American patrols sent out but the 133rd Infantry now occupied a large area around the town. The Germans continued to offer sharp resistance in small pockets.

Tanks from Company B of the 752nd had been assigned to support the attack of the 2nd Battalion toward the eastern edge of Cecina. Moving out at 0800 and reaching their objective at 1300, by 1600 the company was ordered to move all of its tanks south of Cecina to support the 1st Battalion in their attack to the west edge of the town. The commander of Company E heard his supporting tanks preparing to move out, and was able to convince the major commanding the tank company to leave one platoon of tanks behind to defend the in-town forces. These were the five tanks that comprised Company B's 3rd Platoon.

A Company F patrol crossed the river and discovered that the Germans had withdrawn. The 135th Regiment had conquered the high ground several kilometres to the east, and was trying to encircle the northern part of Cecina and the crossroad of the Via Aurelia and Route 68.

THE TIGER ENCOUNTER, JULY 1

The hard fighting that had prevailed throughout the prior days culminated in one final and very heavy counter-attack by German infantry and armour against Company E of the 2nd Battalion of the 133rd.

At 2030, the five tanks from the 3rd Platoon of B Company of the 752nd received word via radio that the Germans were launching a combined tank/infantry counter-attack from the eastern side of Cecina in an effort to maintain control of the area until all their units had withdrawn. Twilight was approaching but there was still sufficient daylight left and visibility remained good.

American accounts differ in their estimates of the strength of the German attack, ranging between 5-10 Tiger tanks and between a platoon and 200 infantry. From German accounts, it is now known that the attack was made by two Tiger tanks of schwere Panzer-Abteilung 504 , one StuG III of Panzerjäger-Abteilung 16 and less than 50 grenadiers. The infantry were from the I. Bataillon of SS.Panzergrenadier-Regiment 35 and they were following the armour in close ranks, in columns of two on either side of the road.

Tiger 221 was in the lead, commanded by Leutnant Wilhelm Keitel, the leader of the 2. Zug (2nd Platoon) of the 2. Kompanie of schwere Panzer-Abteilung 504. The column rested briefly in the cover of a brick factory in the northern part of Cecina and then advanced down a road from the vicinity of Villa Bianca, turning left onto Via Marrucci. Moving slowly past Via Trento and Via Trieste, Tiger 221 began to negotiate the curve to the right into Via Montanara which was a gravel road that formed the eastern end of the town.

Meanwhile, the five Sherman tanks of the 3rd Platoon had moved out to meet the German attack, led by Lieutenant Edwin Cox, commander of Sherman No. 11, an M4A1 armed with a 75mm. Cox's plan was to advance toward the brick factory where the German column had first been spotted. As the 133rd Infantry took cover in the buildings

Via Marrucci as seen from the corner of Via Montanara. The column of two Tigers, one StuG III and some 50 infantry came down this road.

in town, Cox tactically dispersed his five tanks into the streets of Cecina while he took his own tank north-westward up Via Montanara in an attempt to intercept the enemy column. Thus, the German and American lead tanks were about to come face to face with one another although neither crew was aware of this because the lay of the land and buildings obstructed their view.

Cox's Sherman had just passed Via Manzoni on its left when the crew spotted a German soldier in a ditch alongside the road up ahead. Every few seconds, the soldier signaled to someone who was beyond the Sherman's field of vision. Unknown to the Americans the German was acting as a 'spotter' for Tiger 221. The soldier finally stood up to motion the Tiger on, but was immediately hit by machine-gun fire, clasping his stomach as he fell. US artillery and infantry then opened up on the advancing column. The German infantry did not disperse but simply tightened their ranks as their numbers depleted.

Just as the German spotter fell, Cox's crew saw the main gun barrel of Tiger 221 emerge from behind a two-storey house on the left side near the bend in the road. The Tiger rounded the curve onto Via Montanara and came face to face with the Lieutenant Cox's Sherman, at a distance of 75 to 100 yards. It was now two tank platoon leaders, one against the other.

Seeing the Tiger approaching them head-on, the American tankers immediately knew their chances of surviving a close-range frontal fight were not good. As Lieutenant Cox gave the order to fire, he instinctively lowered his head as if expecting to be hit by the Tiger. The driver, Sergeant Raymond Holt, recalled that he too felt this would be their final moment.

Both tanks fired simultaneously. The Tiger's 88mm shell struck the ground close to the left side of the Sherman. The concussion lifted the Sherman off the ground, but caused no damage. Given the strength of the blow, it is believed that Tiger 221 must have fired a high-explosive round, perhaps because the crew was expecting opposition only from infantry. At the same instant, the Sherman fired a 75mm armour-piercing round, hitting the lower front hull (100mm thick) of the Tiger. The shell merely bounced off the Tiger, the only damage being a chip in its Zimmerit coating.

The two tanks momentarily lost sight of each other in the dust raised by their firing and movement. The Tiger crew was further handicapped by the loss of their infantry spotter. Cox ordered his driver to back up into the dust, turn left through a small garden and position the tank tightly against the wall of a two-storied house midway between Via Manzoni and Via Marrucci. Thus, the front of the Sherman was facing Via Trieste, while its rear was facing Via Montanara, where the Tiger remained. Cox then traversed the turret to the rear of his tank, putting the main gun at the 5 o'clock position. He positioned his tank in that fashion to allow for a more rapid escape in the event that the Tiger approached from their rear and could not be successfully disabled. Cox had taken a calculated risk that the Tiger would continue along its original path, and cross in front of his main gun.

The crew waited for the Tiger to reappear. Cox had previously ordered the other Shermans in his platoon to cover the side streets in the town. As they waited Cox's driver watched Sherman No. 13, which was positioned on Via Trieste, a perpendicular street less than a block away. He saw how its commander repeatedly popped out of his open hatch with a sub-machine gun, firing on German infantry who were trying to mount the platoon's other tanks.

Sherman 11 maintained its position for several minutes while the Tigers (or perhaps US artillery) shelled the surrounding buildings. When this stopped, Tiger 221 slowly lumbered down Via Montanara, unaware of the positions of the Sherman tanks. Tiger 221's crew later said that they believed the Sherman was in some brush to their left front.

The German tankers were at the ready in their combat positions. Leutnant Keitel observed the area from inside the cupola, the gunner searched for the target, and the loader stood by with another round. The driver slowly proceeded, awaiting the order to help the gunner traverse the turret. The hull machine-gunner maintained radio contact with the other Tiger. The time was now 2045.

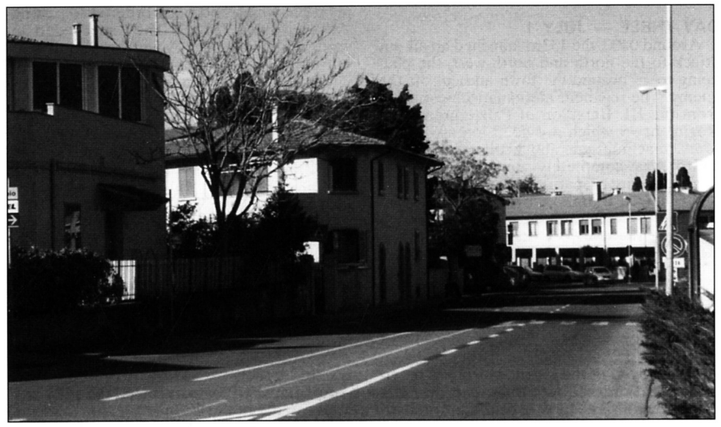
Tiger 221 slowly rumbled down Via Montanara, crossing the position of Sherman 11, directly in front of the latter's main gun. Cox calmly instructed his gunner, Corporal Jack Leech, 'Hold on! hold on!' until the Tiger was squarely in front of them. Taking advantage of the Tiger's thinner armoured sides (80mm thick), Cox then gave the order to unleash an armour-piercing round. The Sherman crew estimate that they were between 25 and 30 yards from Tiger 221 when they fired. The very close range is corroborated by infantry eyewitness reports, and also by the commendation for the Silver Star that was later presented to Lieutenant Cox.

The 75mm AP round penetrated the Tiger's hull through the right rear sponsoon and ignited the fuel tank. The engine compartment burst into flames. Sherman 11 then fired another round into the Tiger's right track for good measure, severing it. One eyewitness claims that upon the destruction of Tiger 221, Cox tipped his helmet from his opened hatch, flashed the 'V for Victory' sign, and moved out.

The Sherman's loader, Private Walter Luhmann, and the gunner recall seeing some of the Tiger's crew escape from their disabled tank after the fuel tank was ignited. In fact all five of them escaped though four were wounded, two of them seriously. They jumped into the ditch beside Via Montanara where they were rescued and attended to by their own infantry. The fact that all of the crew escaped indicates that the round that penetrated the fuel tank did not cause an immediate explosion within the crew compartment. A violent explosion did ultimately occur when the ammo was ignited, buckling the hull roof above the radio operator's position.

The second Tiger was meanwhile engaged by the other Shermans but, with 221 disabled and burning, it and the StuG III withdrew and the German counter-attack collapsed. Germans taken prisoners claimed that their infantry was virtually wiped out, and that the other armoured vehicles returned.

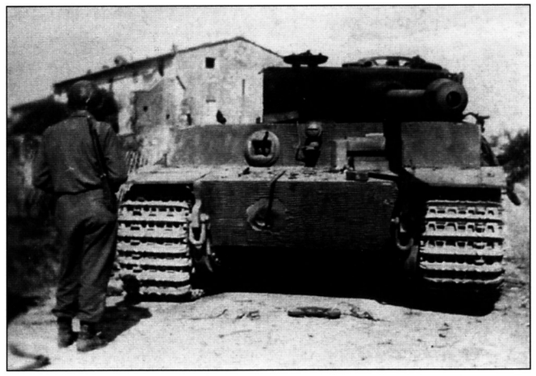
With the collapse of this final German counter-attack, the 133rd Infantry had cleared most of Cecina, but only after 12 hours of vicious house-to-house fighting, and much activity from German snipers.



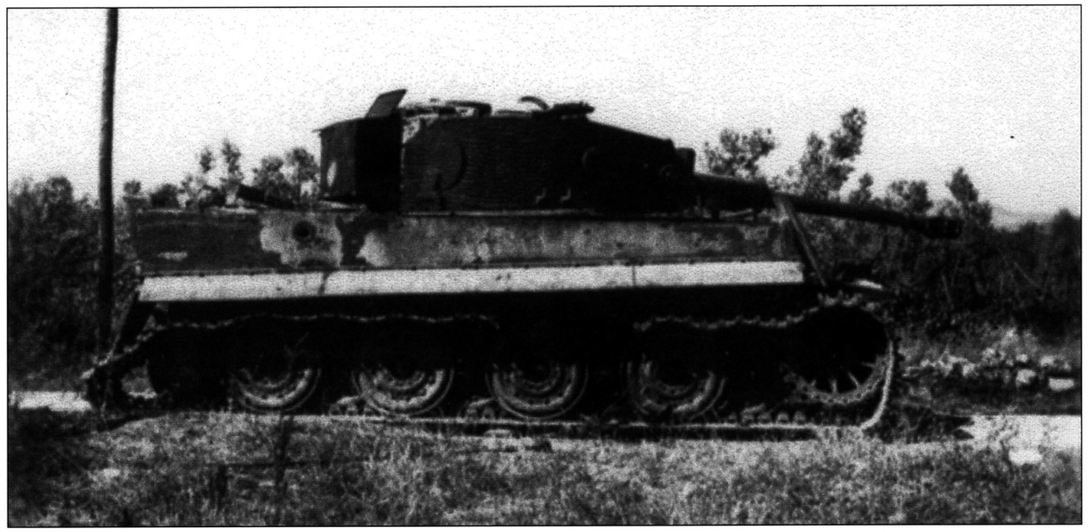
Tiger 221 came turning into Via Montanara from the left at the end of the street. After the first head-on encounter, Sherman No. 11 concealed itself in the garden between the two houses on the left. The original houses were pulled down after the war and replaced with the present-day ones.

On July 3, two days after the battle, US Army photographers took a series of pictures of the knocked-out Tiger. Tiger 221 was a late-model Tiger I manufactured in February 1944, and was one of 45 new Tiger I tanks received by schwere Panzer-Abteilung 504 in Wezep, Holland, in March and April 1944. In the background on the left is the Villa Bianca and on the right the chimneys of the brick factory from where the German attack was first launched. The German spotter who signalled to the advancing Tiger stood a short distance beyond the bush on the far left. On the right is the shallow ditch through which the German crew made good its escape. Note the clear dent where the Sherman's first shot struck the Tiger's front hull. The main gun is stuck in full recoil position, a common occurrence when recoil cylinders came under intense heat. The dust in the background comes from columns of Allied vehicles passing Cecina along the main road. (USNA)

In 1944 Via Montanara was only a gravel track, but today it is a well-developed road leading traffic around the centre of Cecina. New buildings now mask the Villa Bianca on the left, but the small villa seen in the middle of the picture, the factory chimneys, and the public slaughterhouse (Mattatoio Comunale) on the far right remain to pinpoint the comparison.



Left: **Lieutenant Cox inspects Tiger 221 the day after he destroyed it. Cox was awarded the Silver Star on September 23, 1944. The commendation gives a clear account of his Cecina action but contains a few inaccuracies, such as the date (given as July 2), the strength of the German force (six Tiger tanks and 100 infantry) and the number of Tigers destroyed (two). (USNA)** *Right:* **The house at the curve has gone and new buildings line the far end of Via Montanara.**



The Tiger as seen from the garden from where Cox's Sherman fired an armour-piercing round at point-blank range. The German crew believed that their adversary was hiding in the brushwood across the road, hence their gun was pointed in that direction. Note that the track has been severed and the hull roof buckled upward by the internal explosion. The orchard across the road is now a parking lot and being developed with new housing. (USNA)

The neat 75mm hole in the side of the Tiger being inspected by Private Lord E. Ashercraft of the 133rd Infantry on July 3. The AP projectile penetrated the Tiger's fuel tank causing immediate ignition. Most of the Zimmerit — the ribbed-pattern, paste-like coating applied to German tanks as protection against magnetic mines and sticky bombs — has been broken off by the shell blast, the intense heat of the fire, and the force of the ensuing internal explosion. (USNA)

DAY FOUR — JULY 2

The following day, July 2, Company B of the 752nd remained in Cecina continuing to support the 133rd Infantry in mopping-up operations. Company A of the 752nd attacked with the 135th Infantry to the west astride Route 68 and seized Collemezzano while Company C attacked with the 442nd (Nisei) Regimental Combat Team along the road itself. Thus by nightfall, Cecina had been successfully captured, the Cecina river had been crossed, the road junction at Collemezzano had been seized, and Route 68 secured to the east.

The rear of the Tiger shows more signs of the fire that engulfed the engine compartment. Curiously, no tactical numbers (usually on the sides and rear of the turret) or markings appear on Tiger 221, though it is possible that these were burned or blistered off by the fire. The tank's jack, which is visible on the right rear of the vehicle in the earliest after-action photos, is missing, probably taken as a souvenir or for more practical purposes by a local farmer. (USNA)

THE DAYS AFTER

From July 3 to 15, the same US and German units engaged once again in extremely savage fighting at Rosignano, just north of Cecina. On the 12th, two Tigers of schwere Panzer-Abteilung 504's 3. Kompanie avenged the loss of Tiger 221 by destroying four of the five tanks in the 2nd Platoon of Company B of the 752nd. American casualties included four men killed and ten missing.

The fighting in July took a heavy toll and both sides required rest, regrouping, and resupply. After the key port of Leghorn was finally taken by the US forces on July 19, the 19. Luftwaffe-Feld-Division was so badly weakened that it ceased to be a division. A 135th Infantry report written in mid-July described the 16. SS-Panzergrenadier-Division troops in the Castelnuovo and Gabbro area as 'tired of the war and disorganised'. As a result, the 133rd Infantry and the 752nd Tank Battalion went into an extended period of rest and reorganization.

The battle for Cecina had been the most costly action fought by the Americans since the fall of Rome. The 133rd Infantry alone had 16 officers and 388 enlisted men killed, wounded, or missing in action. The 752nd Tank Battalion had lost eleven tanks, with six men and one officer wounded, and two men captured. Despite the heavy loss of tanks, the 752nd did not have any men killed in Cecina. Lieutenant Cox received a cluster to the Silver Star for his actions in Cecina and five other 752nd men received Silver Stars and one a Bronze Star.

German dead in Cecina numbered 118. The 16. SS-Panzergrenadier-Division reported more than 1,000 casualties between June 25th and July 19th (during bombardments and the battles for Cecina, Rosignano and Leghorn), including 52 battalion, company and platoon leaders. During the same period, the division lost five StuGs and one Marder III which was captured with its crew. SS-Panzergrenadier-Regiment 35 claimed the destruction of 15 Allied tanks. Many SS soldiers were awarded the Iron Cross 1st or 2nd class.

The house at the far end of Via Montanara remains unchanged.

Acknowledgements

Many thanks to Ivo Arzilli, Marcello Biava, Claudio Biscarini, Alessandro Dondoli, Leo Gattini, Stefano Paglianti, Federico Peyrani, Luis Piazzano, Guido Ronconi and especially to the veterans and their families.

Left: **A few days after Tiger 221 was destroyed, US troops disconnected its lower track runs and towed it about 100 meters up the road to a villa on Via Pola in order to clear Via Montanara for traffic (see the map on page 33). It is not known how long the tank stood there before falling victim to scrap dealers. The soldier posing on the harmless beast belongs to the South African logistic service.** *Right:* **The house on Via Pola as it looks today.**

RUBENSDÖRFFER AND THE CROYDON RAID

By Andy Saunders

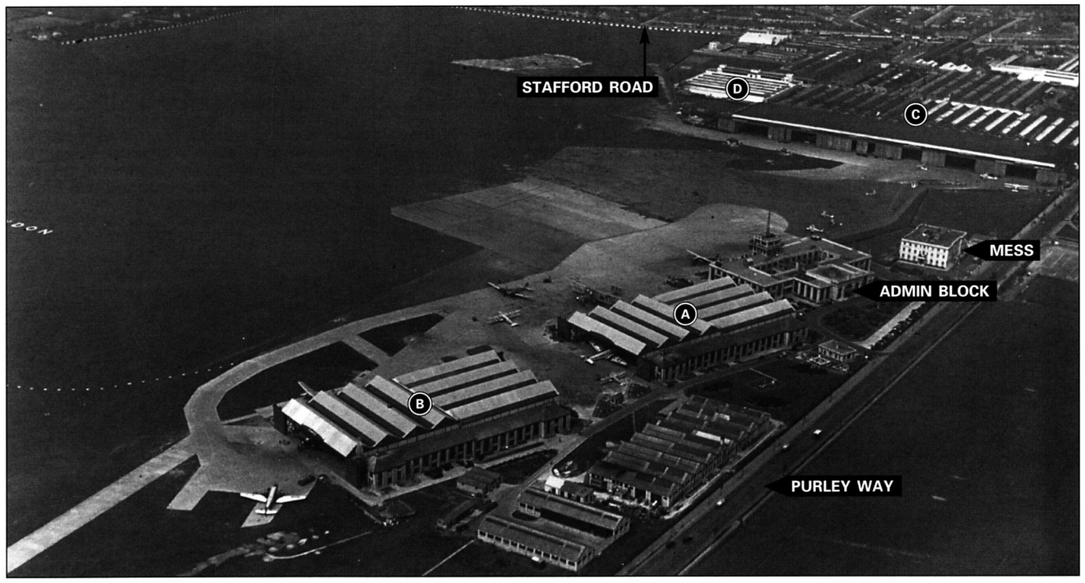
Undoubtedly one of the most well-known bombing raids of the Battle of Britain was that carried out on Croydon aerodrome by the Messerschmitt Bf 110s of Hauptmann Walter Rubensdörffer's Erprobungsgruppe 210 on August 15, 1940. Indeed it seems that barely a book has been written on the Battle that does not feature in some way this particular raid and such has been the level of attention focussed on it that the event itself has almost become part of the legend of 1940; particularly the loss of Walter Rubensdörffer and his Messerschmitt 110.

Although much has been written about Erprobungsgruppe 210 suggesting its status was that of a 'crack unit' made up of 'elite aircrews', the truth is that, although its task was somewhat unique, its aircrews were ordinary airmen drawn from ordinary units. Formed at Köln-Ostheim on July 1, 1940, the unit was charged with operationally testing the use of fighters to carry bombs and deliver them accurately on specific targets. The unit consisted of a Staff (Stab) Flight and three Staffeln. The Stab and 1st and 2nd Staffeln flew the Messerschmitt Bf 110, whilst the 3rd Staffel flew the Messerschmitt Bf 109. The unit also test-flew on operational missions the Bf 110 C-6 equipped with a single 30mm cannon under the centre of the fuselage (in place of the standard twin 20mm cannon) for use in the ground attack role.

As to the origins of the aircrews, 1st Staffel had been formed out of 1/ZG1; 2nd Staffel from 3/StG77 and 3rd Staffel from 4/JG186. Under the command of Hauptmann Walter Rubensdörffer, the unit was rapidly moulded into a business-like and combat-ready outfit moving to Denain, France, on July 10 and commencing shipping attacks almost immediately on the 13th. They continued with these attacks up until August 12 at which time they turned their attentions to raids on radar installations and a mission against RAF Manston. The unit was to return to Manston again on the 14th, but it was the operation flown the following day for which they were to become particularly noted.

Thursday, August 15, 1940. At 1830 hours, the station siren at RAF Croydon sounded the warning 'Raiders Approach' and 19 minutes later the first bombs hit the airfield. Although the raid was mis-directed as Eprobungsgruppe 210 had been briefed to attack Kenley, it caused extensive damage, both in and around the airfield. *Top:* **This was the scene in Stafford Road on the northern side late that afternoon.** *Above:* **Today the entrance leads to the Silverwing Industrial Estate.**

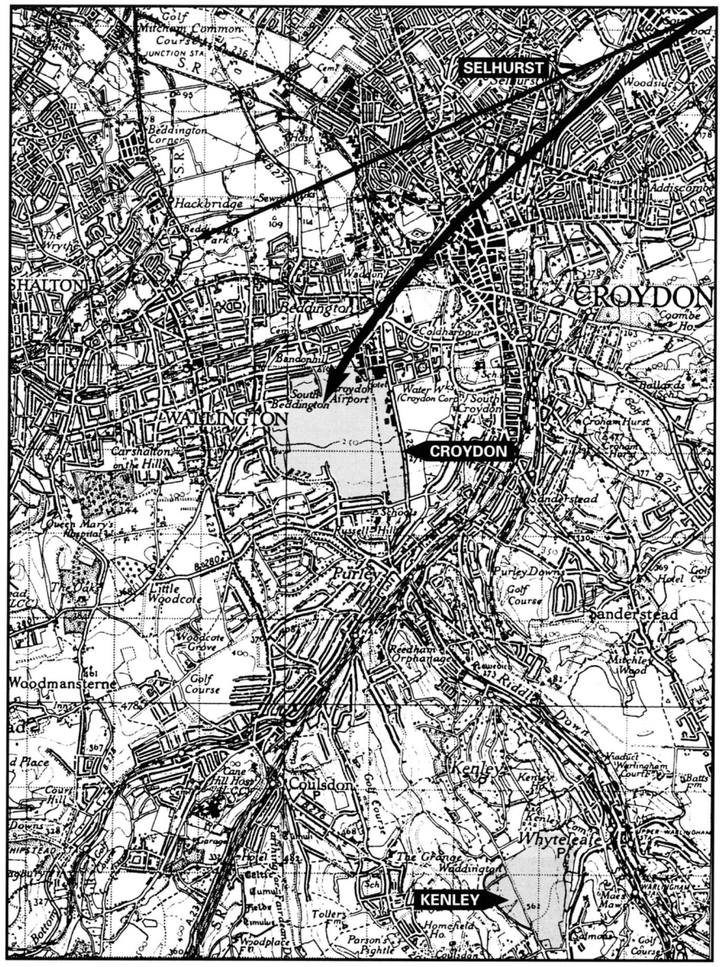
The attack was led by Hauptmann Walter Rubensdörffer *(left)* **with his gunner Obergefreiter Ludwig Kretzer** *(right)* **in the rear seat. He intended to lead the formation on a wide sweeping circle so as to hit Kenley while already southbound so they could continue straight on to their home base at Calais, but in the summer haze they flew too far north and instead arrived at Croydon. Too late to abort, the attack was pressed home but British fighters were waiting.**



Croydon, established as London's main airport in 1920, lay on the western side of Purley Way and had been taken over by the RAF in September 1939 as a satellite for Kenley, just over three miles to the south. In August 1940, No. 111 was the resident squadron and their Hurricanes were already in the air supported by No. 501 from Kenley and No. 32 scrambled from Biggin Hill when the attack came in. Although the official report states that only nine HE bombs hit the airfield (seven 500lb, two mediums and a number of incendiaries), the southern wing of the Terminal Building (used by the RAF as their Admin Block) was struck and damage caused to 'A', 'C' and 'D' hangars, 'C' hangar being particularly badly hit. The armoury received a direct hit with minor damage caused to the Officers' Mess and MT fuel installation.

Having been briefed for an attack on RAF Kenley, the unit took off from its forward operating base of Calais-Marck during the early evening; in total 23 aircraft. Fighter cover was to be provided for the mission by JG52 but somewhere en route, whilst flying in top-cover position 200 metres above Erprobungsgruppe 210, the Bf 109s became detached from their charges and returned to base. One report indicates this was due to fuel shortage, and given the Bf 109s operational limitations in this respect then this is quite likely. However, from that moment on things went badly wrong for the Bf 110s although with Rubensdörffer leading the entire formation, and Oberleutnant Otto Hintze heading the 3rd Staffel in their Bf 109s, Kenley should have been minutes away from a devastating assault. With the escort of JG52 lost, and one Bf 110 (S9 + EK) having returned to base through technical problems, the formation of 22 aircraft began a run-up to the target in the early evening haze. Apparently it was this haze which resulted in the intended target being missed, but what happened next is best described by one of those who participated, Leutnant Karl-Heinz Koch, the Gruppe Technical Officer who flew in the leading Stab flight. Writing in 1979, Koch described his experiences as follows:

'On 15th August, 1940, I flew as No. 3 behind the Commander and Adjutant, Hptm Rubensdörffer and Oblt. Fiedler. Our target was Kenley. Since the visibility in the evening of that fateful day was very bad due to haze we missed Kenley and hit Croydon instead. During the dive I realised that this was not our target but it was too late; we were already in the attacking phase and beside that I had to follow the lead. However, Croydon was a target forbidden by our High Command as it was part of the London area. At this time attacks on London were not allowed. Over Croydon we were attacked by fighters and at this time my gunner, Unteroffizier Kahl, was hit. Whilst heading for home over Sussex he was hit again — altogether five times. It was obvious I could not make it home and I force-landed near the South Coast [at Hooe, East Sussex]. I stepped out of my machine without a scratch and about five members of the Home Guard appeared. About 15 minutes later I was taken prisoner by three policemen and taken to the police station where I stayed for about 2½ hours before being handed over to the 6th Devonshire Regiment in Hastings Castle [*sic*] where I spent the night. My gunner was taken to hospital, seriously wounded. So ended my 100th mission and I became POW No. 51156, the 219th Officer Prisoner.'



On the ground, the approach of the raiders was being watched by Mr H. F. Hartwell from his garden in Selhurst: 'We wouldn't have seen this event if the siren alert had been sounded before the raid as we always went to the shelter on hearing the alert. One of the raiding aircraft flew straight on from the rest until it dropped two bombs. We then promptly disappeared down the Anderson shelter'.

What had been planned as a surprise attack at one of the RAF's front-line bases turned out to be an unmitigated disaster. Not only was the wrong airfield bombed but seven of the attacking aircraft failed to return. *Above:* **This is the Bf 110 of Lieutenant Karl-Heinz Koch who was in the leading flight. He was harried all the way to the South Coast and force-landed on School Farm at Hooe in East Sussex. He may be forgiven for believing that he had been held in Hastings Castle. It was, in fact, Battle Abbey, built on the site of that other Battle for Britain in 1066!**

Over Croydon, the Messerschmitts had been caught by RAF fighters including the Hurricanes of Nos. 32 and 111 Squadrons, with No. 501 Squadron joining in the chase as the Messerschmitts fled southwards — but not before the bombs of the German attackers had struck Croydon aerodrome with devastating effect. Sixty-two were killed and 137 injured amongst the debris of the airfield buildings, factories and houses bordering the site. The Bourjois Scent Factory, British NSF Factory, Rollasons, Redwing and C Hangar suffered particularly, so did domestic dwellings on the nearby Waddon Estate and other properties adjoining Purley Way.

In the confused air battles which developed as the Messerschmitts attempted to exit 'stage south' it is difficult to say in the majority of cases with any absolute certainty who shot down who. However, seven of the Erprobungsgruppe 210 raiders were brought down and the entire Stab (Staff) flight wiped out. First to go was the Adjutant, Oberleutnant Horst Fiedler and his gunner Johann Werner, despatched by Sergeant William Dymond of No. 111 Squadron and Sergeant Leonard Pearce of No. 32 Squadron over Redhill. Fiedler later died from his injuries, but Werner was taken prisoner.

Having been hit over the target, Koch was pursued all the way to the Sussex coast by Flight Lieutenant 'Humph' Russell in a Hurricane of No. 32 Squadron's training flight. He eventually finished it off over Bexhill, forcing Koch to land at Hooe and thus deliver both himself and his gunner into British captivity. Away to the north-west his commander was not so lucky.

Previously published accounts have attributed the destruction of Rubensdörffer's aeroplane to Squadron Leader John Thompson of No. 111 Squadron, but it seems highly likely that the victor was Pilot Officer Byron Duckenfield of No. 501 Squadron although Rubensdörffer may well have been hit earlier over Croydon by Thompson. Nevertheless, Duckenfield reported that he had chased a 'Dornier 215' [*sic*] for several minutes before expending the last of his ammunition on it and setting one engine on fire and observing that it crashed 'in the vicinity of Tunbridge Wells'. Due to the fact that he was low on fuel, Duckenfield was unable to check the exact location of the crash but in fact the only loss in this vicinity of a twin-engined aircraft was that of Rubensdörffer.

However, seconds beforehand, Lieutenant Horst Marx in a Bf 109 of the 3rd Staffel, had been shot down by Pilot Officer 'Polly' Flinders of No. 32 Squadron over the nearby village of Frant. Upon capture, Marx explained that he had been attempting to keep up with his commander to offer him some measure of protection.

Leutnant Horst Marx *(above)* **of Erprobungsgruppe 210 was flying one of the Bf 109s escorting the two-seaters. He was shot down in flames at Lightlands Farm at Frant.** *Below:* **This is PC Hayworth's report of the incident.**

DIV. REF. H.Q. REF. 37/CA4

CRASHED AIRCRAFT REPORT

Parish FRANT. Date 15th August, 1940. Time 19.10.

Exact Location Lightlands Farm, Frunt.

Map Reference

British, Allied or Enemy German. Type M.E. 109.

Condition of Machine Burnt Out.

CREW

Killed Seriously injured Slightly injured Unhurt 1

Not traced

Disposal of crew Handed over to 69th A/T Regt. R.A. Mayfield.

Which R.A.F. Station notified Biggin Hill

Time and Date of notification

I. P.—20453

Detail of Occurrence

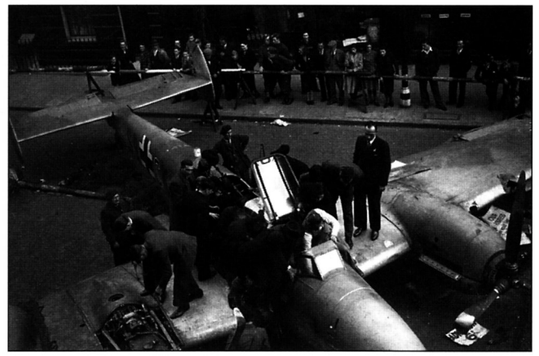
Machine was shot down in an encounter with a British machine. Pilot baled out and landed at Mark Cross. He had a slight cut on his left thumb.
Pilot:-

Lt. Horst MARX. age 21. Identity No (539) 14/3.
Disc No. 53581/29.

Time and Date information received by Police

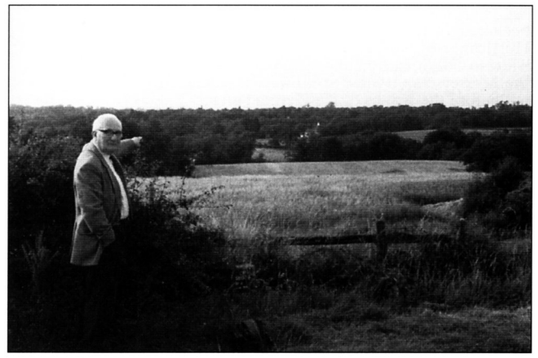
Signature Henry Hayworth. P.C.

Two more down. Oberleutnant Fiedler crashed on Redhill aerodrome and died from his injuries three days later. His gunner, Unteroffizier Werner, survived.



Oberleutnant Habish managed to force-land at Hawkhurst. Later his aircraft was put on display and could be inspected by the public for the princely sum of 6d (2½p).

George Tuke, an eyewitness to the crash of Hauptmann Rubensdörffer's machine, stands in for the policeman who stopped the bus that George was travelling on at this exact spot.



Just across the road, George points out where he saw the Messerschmitt come flaming to the ground. It passed low over the trees on the horizon before crashing just beyond the oast house in the middle distance.

Exactly what happened in Rubensdörffer's last moments will never be known for sure, but Marx did reveal upon capture that he had heard his commander call over the radio that he had been hit. Although one can only speculate what happened on board Hauptmann Rubensdörffer's 110, we do have a detailed account from an eyewitness on the ground. Sixteen-year-old George Tuke, caught up in the excitement and drama of the Battle of Britain, had a grandstand view:

'Thursday, August 15th, 1940, began quietly with the promise of a fine and sunny day. Feint activity was heard but not seen in the Mayfield area and started around mid-morning but was not close enough to give rise to any concern or any need for taking cover. This day saw me having an early lunch with my parents at my Mayfield home followed by a bus ride to Tunbridge Wells to the Ritz Cinema for a film show.

The road to the north of Mayfield passes an area called Trulls Hatch, with a side road leading down to the nearby village of Rotherfield. At this point there is a natural layby (southbound) with a fringe of trees along its length with a high brick wall behind. It was here, on my bus journey home in the early evening and with the conductor leaning out from the rear platform to keep a wary eye open for air activity, that we were stopped. The air raid sirens had wailed their message sometime previously when a police officer or ARP warden stopped us with his raised hand and directed the bus under the trees with the other. This was not the first time this had happened here, and I always thought it such a sensible precaution as it was not unknown for homebound German aircraft to have a squirt at road or rail traffic. Anyway, we were ordered — yes, ordered — off the bus to take cover.

'I walked across to the other side of the road to a ditch alongside a gate into a field to await whatever was about to occur. Distant air activity could be heard to the north. Suddenly my attention was drawn to what can only be described as a ball of black smoke flecked with red coming at a very low height towards me. Obviously an aircraft in dire distress . . . but who's: British or German?

'As it rapidly approached, clearing Mark Cross College by inches, such was the intensity of smoke and flame and with an awesome trail of what must have been literally molten metal dropping off and floating to the ground that one could not ascertain that it really was an aircraft. In an instant it dived into the ground, followed a few seconds later by a pent-up explosion and a towering pall of smoke and flame. As I jumped the gate and ran at breakneck speed to the impact point minor explosions of pockets of fuel and ammunition tanks rocked what had been a quiet and peaceful summer's evening.

'The crash had taken place within the confines of a pig farm. Wreckage was everywhere. Pigs that had not been killed were scampering in blind panic, some so terribly burned and injured and squealing as only pigs can. The heat from the burning wreckage, coupled with the stench of aviation fuel and oil plus frying pigs was nauseating to a marked degree.

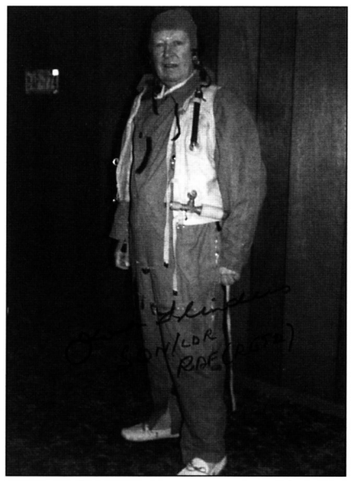
'I soon realised that the aircraft was a Messerschmitt 110 which normally carried a crew of pilot and gunner. Amidst all this were their now crumpled bodies. It now became somewhat dangerous to linger as exploding ammunition was cracking off in all directions, so I beat a hasty retreat! I was aware that other people were converging on the scene, and some may have been there before me. Later, as I made my way back to the main road, someone catching me up remarked: "All those bodies!" I don't think he was aware that what he thought were numerous bodies of people were in fact dead pigs. By this time the surrounding roads and lanes were jammed with sightseers and vehicles. Fortunately, I did not have to wait long for a bus to continue my journey home, but I remember it took some time to clear my lungs and mouth of the stench which had been breathed in and which also clung to my clothes.

'Years after the war, when I travelled along through Trulls Hatch, I still expected someone to step into the road with a raised hand and direct one into the layby. Yet nothing had changed except the height of the trees.'

Rubensdörffer's aeroplane had in fact come down in the piggery of Bletchinglye Farm at Rotherfield, Sussex, but, despite its almost total disintegration in the crash and the subsequent fire and explosions, Air Intelligence Officers were able to report as follows:

'*Me. 110.* Crashed at Betchingly Farm, nr. Markscroft *(sic)*, Tunbridge Wells. Markings G(or C) 9 + AB (A in green), on stabilising fin WN3338. Aircraft made by Gotha Waggon Fabrik. Engines DB 601. Aircraft dived into ground after fighter action and disintegrated over wide area. Two 20mm cannon found, and four 7.92mm machine guns. Crew of two both killed. Traces of .303 bullets in various parts of aircraft.' (In fact the Intelligence Officer had misread the first code letter (G or C) on the smashed fuselage side, for it was actually S, the full codes being S9 + AB).

From the gate by the piggery buildings, George reflects on the scene: the bodies of the pilot and gunner, covered with sacking, lay where the pile of logs stands on the right.



Left: **After the battle, Pilot Officer 'Polly' Flinders, centre, of No. 32 Squadron filed the following combat report: 'I took off from Biggin Hill at 1845 hours on August 15th in Hurricane N2062 with S/Ldr Russell. We climbed to 12000ft in the direction of Kenley but on the climb I was left behind. When I was at 12000ft I saw anti-aircraft bursts in the direction of Croydon and on investigation saw that enemy aircraft had bombed Croydon aerodrome. I flew in that direction and saw two JU 88 *(sic)* on my right and 3000ft above me flying in a S.E. direction about four miles away. I gave chase and was catching them up when a ME 109 came towards me from the starboard side. I throttled back completely and he passed in front of me and into my sights. I fired for about two seconds and a stream of white smoke came from his engine. The aircraft dived towards the ground, I realised that he could not get home and continued to chase the bombers. A minute later I saw a parachute open at about 6000ft south of Sevenoaks. By now the JU 88's *(sic)* were about six miles ahead and I was still a long way out of range when I reached the coast. I returned to my base.' When he landed, he heard that the German pilot, Horst Marx, was being held at the police station at Mark Cross, near Tunbridge Wells. Off he went to see his foe and claim his prize — the flying kit that Marx was wearing.** *Right:* **'Polly' dressed in the same flying kit and Mae-West in 1992. 'He seemed to be a novice in aerial combat', recalled 'Polly', 'and he was the easiest of all my kills although I was pleased that he survived.'**

In view of the fame and notoriety which has subsequently been attached to Walter Rubensdörffer's brief career in the Battle of Britain and, in particular, the bombing of Croydon, approaches were made to the landowner for access to the site but permission was not given until July 1988 when the incident was being investigated by a team of locally-based aviation archaeologists. In a one-day search of the site, a mass of small items were retrieved, including smashed engine parts; the inner tube from the tailwheel; over 500 heat-exploded 7.92 cartridge cases; remains of a morse key; a mass balance weight; straps from a German flying helmet; and an instrument. Only small finds indeed, but significant relics nonetheless from this famed incident.

Investigating the crash site — wreckage was strewn right across the field *(right).*

The 30-year-old Swiss-born Walter Rubensdörffer was originally laid to rest with his gunner Ludwig Kretzer in the cemetery at Tunbridge Wells *(left)*, **but were exhumed after the war and reburied in the central German War Cemetery in Britain established by the Volksbund Deutsche Kriegsgräberfürsorge at Cannock Chase in Staffordshire** *(right)*, **both being buried in Grave 20 of Block 9. (It is almost certain that the unknown of 26.10.40 is Unteroffizier Karl Geiswinkler of 6/JG53 shot down on that date at Chalket Farm, Pembury, although today at Cannock his date of death is no longer shown on the gravestone.) Intelligence Officers searching the pockets and personal effects of both dead Germans discovered on Rubensdörffer a telegram from Kesselring congratulating him on the award of the Iron Cross, 1st Class for 'courageous leadership' but greater recognition was yet to come. On August 19, 1940 came the posthumous award of the coveted Ritterkreuz. Rubensdörffer's place in the history of the Battle of Britain was assured.**

On March 13, 1945, the Fifth Battle of Courland — which had begun on February 27 — ended. Hitler was determined to hold out on the Latvian peninsula to tie up Soviet forces which might otherwise be employed in the assault on the German homeland. Consequently, with their backs to the Baltic, the remnants of Generaloberst Ferdinand Schörner's Heeresgruppe Nord — veterans of Leningrad — were destroyed on the anvil of the Soviet 1st Baltic Front. Today, the relics and remains of the battle lies mouldering in the wooded countryside of the so-called Valley of Death.

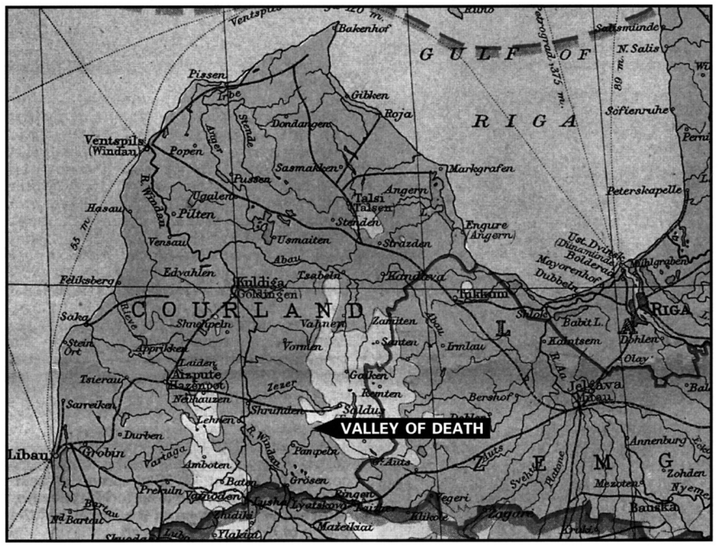
DIGGING IN LATVIA'S VALLEY OF DEATH

By Chris McDermott

We are 130 kilometres south-west of Riga in a forest that has no name. On the maps, it is just a green shaded area with a marsh at its centre — just another expanse of dense foliage deep within Latvia. It looks tranquil enough, untouched even. The only access is down a rutted, twisting dirt road that seems to go on forever. Apart from the occasional logging track, there is no other visible sign of life — surely the place has remained unchanged for hundreds of years?

The wind scatters the fur and pine trees and the lack of any human noise, apart from our own, is very odd and for a Westerner — used to continual background noise — slightly disturbing. Frogs leap away from our advancing wellies; crucial for the ground is boggy, and tangled, twisted branches grab and claw at our faces.

Everything seems to look just as it has done for thousands of years. But when you look closer, become more attuned to the contours of the ground and study the rise and fall of the land, you realise this is not a forest untouched by man, not a forest tranquil and unchanging, but a place of death and destruction. For what first appeared to be a small brook and large, leaf-filled ponds are in fact trench lines and command bunkers. Scattered collections of holes and divots aren't fox or badger dwellings, but the remains of a German bunker position. The solid immovable objects that are easy to trip over are not the thick hard stumps of roots, but the top end of unexploded German 81mm shells. . . Welcome to Latvia's 'Valley of Death'.


GULF OF
RIGA
COURLAND
VALLEY OF DEATH
Ventspils (Windau)
Libau
Bakenhof
N. Salis
Söfenruhe
Peterskapelle
Markgrafen
Angern
Pissen
Gibben
Roja
Popen
Sasmaken
Pilten
Hasau
Vensau
Edvahlen
Usmaiten
Strazden
Engure
Mayrenhof
Dubbeln
Jaklasm
Babit L.
Kaiwasem
Irmlau
Sarten
Vanneg
Zaraiten
Vormen
Golden
Saldus
Pampeln
Amboten
Brösen
Tegeri
Bandska
Annenburg
Lohden
Mazeikiai
Berghof
Durben
Grobin
Sarreika
Lehmen
Shrunden
Zaser
Interaui
Stein
Ore
Soka
Blase
Dyrbiken
Laiden
Airsputte
Hazenpot
Nahhausen
Prekuln
Tadaiten
Barkau
Bartmi
Plakuln
Ringen
Lyatsken
Kliken
Zagaren
Tirkeln
Ventspils
Kuldiga (Goldingen)
Talsi (Talsen)
Ugalen
Usmaiten
Abau
Tealsen
Hasenhof
Strazden
Angern
Engure
Jaklasm
Zaraiten
Irmlau
Kaiwasem
Golden
Saldus
Pampeln
Berghof
Annenburg
Lohden
Bandska
Mazeikiai
Plakuln
Tirkeln
Zagaren
Kliken
Ringen
Lyatsken
Tegeri
Brösen
Amboten
Grobin
Libau
Durben
Sarreika
Lehmen
Shrunden
Zaser
Interaui
Stein
Ore
Soka
Blase
Dyrbiken
Laiden
Airsputte
Hazenpot
Nahhausen
Prekuln
Tadaiten
Barkau
Bartmi
Peterskapelle
Söfenruhe
Roja
Gibben
Pissen
Popen
Sasmaken
Pilten
Hasau
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Edvahlen
Usmaiten
Strazden
Engure
Mayrenhof
Dubbeln
Jaklasm
Babit L.
Kaiwasem
Irmlau
Sarten
Vanneg
Zaraiten
Vormen

German ammunition bunkers. The loose 81mm mortar shells recovered were in remarkable condition bearing in mind they had been buried for some 60 years.

The going was tough as we followed two deep rutted tracks made by some kind of logging-truck leviathan and the walk into the area of the battle took another hour and a half. The foliage was so thick and disorientating that our guides routinely cut indents into the trees so that we would be able to find our way out again.

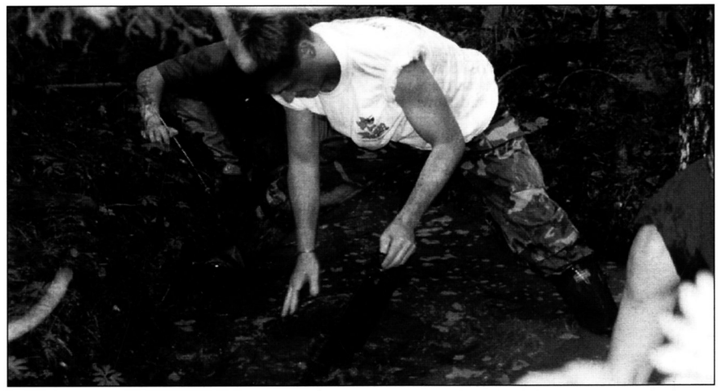
Along the path was the evidence of what took place here. Shattered trees long hollowed out, deep round shell holes and half filled-in trench systems. Rounds of 7.62mm ammunition, steel helmets and the occasional shell casing lined our route — evidence of earlier digs and finds.

What state the Germans must have been in when they arrived in Latvia one can only imagine. Having been involved in the original Blitzkrieg into Scandinavia and then the siege of Leningrad, Heeresgruppe Nord was a formidable, if battle-scarred fighting force. But the remnants of the army that dug countless trenches and bunker positions in this almost deserted part of Latvia in a desperate struggle to stop the Soviet advance must have been tired, hungry and pretty sick of war. Cut off from a land escape route by the Russian 1st Belorussian Front, and with Hitler stubbornly refusing to allow them to evacuate by sea, to members of the army group it must have all seemed pretty futile.

With very little rise and fall in the ground we continued deeper into the forest. More and more evidence of the battle greeted us, and like novice adventurers we took photos of everything; holes, bullets, helmets and trees which filled up many rolls of film. The Diggers were leading us to a place they had found earlier in the year and one they believed contained a rich variety of weapons and equipment. What we found was a hole in the ground filled with mud and water. Tired and a little disorientated this was not what we had expected. The Diggers explained that this had once been a German ammunition bunker and by the excited looks on their faces we could tell they believed there was plenty of unused ammo still in there.

Stripped to the waist and clad in our waders we ventured into the water, more full of hope than confidence, but within minutes the 50-year-old bunker began to grudgingly reveal some of its secrets. It was hard going, the floor of the bunker was just thick, sticky mud and most of the finds were discovered more by luck than judgement. A long, thin steel probe became the most sought-after piece of equipment we had.

Surrounded by smaller trench systems the bunker was set apart from the rest by some distance. This was obviously because as it stored ammo the chances of explosion were pretty great! Having lain in the ground for so many years the 81mm mortar shells that started being pulled out of the mud were in remarkably good condition. All were live, most with original markings, and a number still packed inside their metal boxes. We tugged them out of the mud like prize catches and raised them up triumphantly to show the others.



Full cases of bombs were also pulled from the mud.

Left: **Mortar bombs from a trench system. Some were in pristine condition still showing the original markings like this Soviet 82mm.** *Above:* **An 8.8cm rocket grenade.**

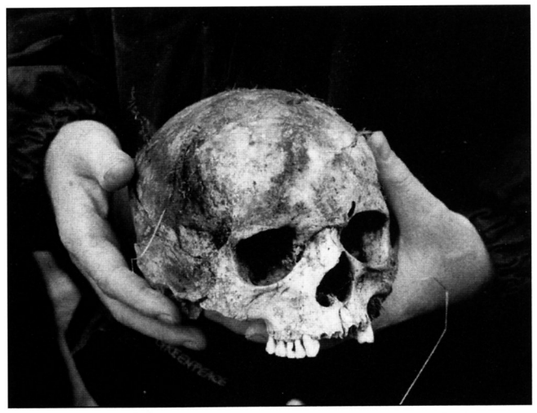
Not far from here one of our team had been given a metal detector (White's Spectrum XLT set for relics) and, after hours of false readings, found a Mossin carbine with the bayonet still attached and the bolt still in the breech. This was a rifle used mainly by Russian artillery troops and was one of the highlights of the trip as the Diggers had never uncovered anything like this before. The other good find was a rocket from a German anti-tank weapon (8,8cm RPzB-54). This was pulled out of the thick mud of the ammo bunker.

Half a day later and we had enough live ammo to start a small insurrection. Dozens of 81mm (German) and 82mm (Russian) mortar shells, a couple of hand-grenades, a number of empty Panzerfaust one-shot anti-tank rockets, wooden ammo boxes and cases and an almost complete German gas mask lined the side of the bunker hole. It was at this point that a Russian TV camera crew arrived to film the scene for the audience back home and to gather more information about the Diggers' work. They also took a passing interest in ourselves and what had brought us to Latvia.

After lunch we travelled deeper into the forest to a place where the Diggers believed there were the remains of a number of soldiers. Nearby we found a tank shell and eight Russian mortar shells in a shallow ditch.

A search of a trench system deeper in the forest revealed more German mortar bombs and . . .

. . . a complete 7.5cm KwK tank shell. More significantly, the discovery of personal kit revealed the existence of human remains.



Chris says that the remains of many soldiers still lie where they fell but that identifying which side they were on is relatively easy. Usually a helmet is lying close by and this is a good pointer to whether they are Russian or German. A rather gruesome way to find out if the helmet belonged to the body is to see what damage has been done to it and compare that to the state of the skull. This particular soldier was found with the remains of his body still booby-trapped with hand-grenades.

At one site we found a Russian helmet with a bullet hole on the left side and beneath it only the jaw bone and small fragments of the occupant's skull! Next to this were hundreds of spent machine-gun casings — evidence that the poor fellow was making some sort of last stand as his position was overrun. More sinisterly, we found beneath his body two hand-grenades attached together with a trip wire. From the way it was set out, the Diggers reckoned the body had originally been booby-trapped.

Personal equipment and possessions are also another good indicator of which side the soldiers were on. What is almost impossible to do is to identify the actual individual, as the Russians particularly rarely carried any form of ID that could have lasted 50 years in the ground. All the remains that we found on our trip were identified as being Russian.

The euphoria of the morning was replaced by sober introspection as we dug and then laid out the bones of the fallen men. These are the unknown soldiers, having lain undiscovered in the forest for so long. Perhaps somewhere back in the Russian heartland is a surviving relative who will never know where his or her loved one fell. With one set of remains we even found an aluminium cigarette case. Poignant though it was, it still did not help in identifying the owner. All the bones that the Diggers find are taken back to Riga and stored, until a proper burial with honours is conducted. This is done every May in the presence of the Russian Ambassador.

A cigarette case . . . but with no clues as to the identify of its former owner. 'It was whilst examining the remains of another set of bones close by', continues Chris, 'that we came across the handiwork of the so-called "Black Diggers". These are, according to our hosts, unscrupulous treasure hunters who scavenge the remains looking for anything of value to sell either in Latvia or to collectors overseas. The bones they find are scattered, strewn and forgotten in the search for valuables and this was certainly the case with the third set of human remains that we came across. Only one solitary hand-grenade was left in the shallow hole we found, everything else had either been taken or thrown away. We collected up what we could find and made a simple cross, laying it in the hole as a mark of respect.'

All human remains and personal belongings were taken away for handing over to the proper authorities in Riga.

By now the sun was slowly beginning to drop from the sky and we began the long walk out of the forest. Our thoughts on that first day were mixed. There was plenty of excitement about the things that we had found, exhaustion from the physical labour and sadness about the human remains and the ultimate futility of their deaths.

Days two and three revealed to us the true nature of digging, i.e. lots of actual spade-in-hand shovelling. Whereas in the first day we had been to places well known to our Latvian hosts, now we went into uncharted territory, deeper into the forest to places they had only visited maybe once before.

One of the constant hazards even in May was the abundance of mosquitoes. An ever-present irritant, they are always around your face, hands, arms or any other unprotected area of skin. One of our team was bitten so badly that his hand swelled up alarmingly, so much so that the team doctor decided he needed more advanced treatment than our first aid kit and trauma pack could provide and they both trekked out to find the nearest medical centre.

Our finds on these two days were not as exciting or as numerous as on the first. We got a taste of what it is like to physically find and then dig out another massive bunker, but this time with no guarantee of success. After an hour or so of digging the metal detectors went in but could find no trace of anything and we gave up. We did find a huge horde of Russian POMZ anti-personnel mines imbedded deep in a trench and spent a few hours exploring an intricate German bunker system but the finds were limited to bullets, shell casings and helmets.

All the live ammo that we found was left out in the open and as visible as we could make it. In the next couple of weeks engineers from the Latvian Army will accompany the Diggers into the area and will either make it safe or blow it all up.

And then our time was up in the forest. Weighed down by helmets, empty mortar shells and wooden ammo crates we made our way back to civilisation. Driving back to Riga we stopped at the home of a man the Diggers regard as the godfather of digging. Here we were treated to a private viewing of his collection, which spanned 25 years' worth of mooching around Latvia, Lithuania, Estonia and Russia.

Blockaded and decimated, the Germans became even more contained in the Curland Peninsula. The front line encroached more and more into their territory as the Russians kept them successfully penned in. Some Germans managed to escape by sea but most were left to fight it out right up until VE-Day. Latvia became part of the old USSR and, apart from the removal of heavy armour, the battlefield was left to nature; if not forgotten then certainly abandoned to the elements.

Just before we flew home, the Diggers had one last thing to show us. In the unlikely setting of a sports stadium in Riga was a T-34 and an IS-2 tank that they had pulled out of a bog the year before. They were both so well preserved by the silt that within three days they had the T-34 going!

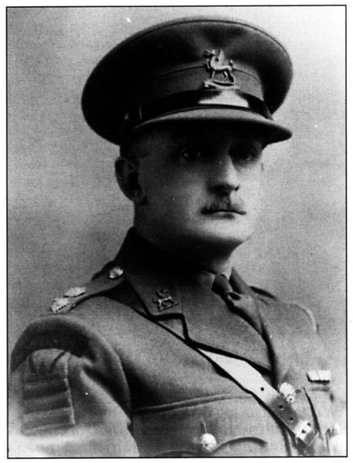
Although it put our small collection of finds somewhat into perspective, we were still proud that we had been to that far-off forest, so far away from the comforts and certainties of home. We enjoyed the excitement of finding so many unusual things but the real satisfaction came from knowing that the unknown soldiers that we found will soon be laid to rest with some honour and dignity.

POSTSCRIPT

We learnt a lot on our trip but probably the biggest lesson was trying to get our finds back into the UK. Everything had been made safe and it was basically just bits of rusting metal and as such we booked it in as hold luggage. Unfortunately the bag fell off the baggage carousel in Vienna (we were in transit in Austria), spilled open and the resulting panic by officials nearly closed the airport. It is now in the possession of the Austrian Police bomb squad who, we have been informed by the British Embassy, plan to destroy it.

More information on the trip can be found at www.onthisisland.com

A simple beechwood cross was left to mark the field grave where the booby-trapped Soviet soldier had been found.



Uniquely placed to reflect upon cowardice in battle, Lieutenant-Colonel Archie Browne *(left)* served in both world wars. He was an infantryman in the 28th (Public School) Battalion of the Royal Fusiliers and fought in France and Belgium with the 4th Battalion, being awarded the Military Medal for brave conduct in March 1918. Between the wars he commanded C Company of the 2nd Monmouthshire Regiment and was promoted to Brevet Major in the 1937 New Year's Honours. His various postings during the Second World War included Brigade Major of the 160th Infantry Brigade; commanding officer of the 2nd Monmouths, and a staff officer with 21st Army Group on the Continent. Later he was appointed Permanent President of District Courts-Martial for BAOR. His career came full circle in 1945 when he was sent to be area commander and town major of Ypres — a town he had seen plenty of during the previous war. *Right:* Colonel Browne, centre, during the 1945 VE-Day celebrations at the Menin Gate — the memorial to the missing in the Ypres Salient in 1914-18.

COWARDICE IN BATTLE

By Lieutenant-Colonel Archie Browne, MM, TD (Retd)

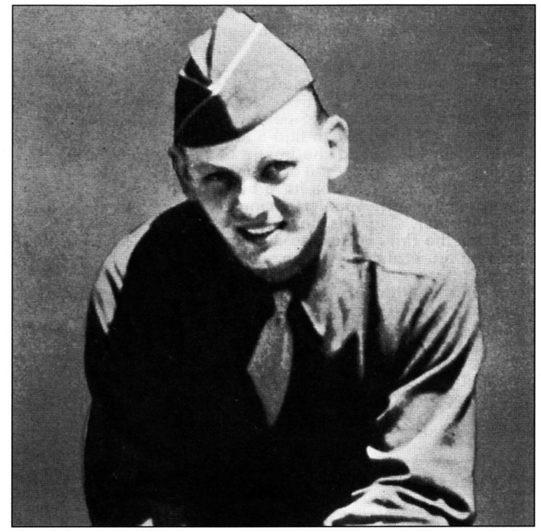
Looking back over events relating to war, a person is apt to be struck by certain significant details which characterise the impact of battle on human behaviour. In the panorama of the two world wars, in which I served, very little has been recorded of this behaviour in its relation to the fighting soldier. The most outstanding in this context relates to the psychology of fear in its relationship to cowardice, desertion, self-inflicted wounding, and battle exhaustion. This sense of fear varied in the development of past wars. In the pre-1914 armies, the fear was more inactive mainly because the battles were fought on the 'en masse' principle by men who were of tough fibre, whereas in the two world wars the majority of men who served found that 'soldiering' was alien to their upbringing and way of life. Hence the sense of fear in battle was more individual and active.

In the First World War, the Regular Army was considerably reduced in numbers following the 1914-15 battles, and these casualties were replaced by the volunteers of Kitchener's Army, which consisted of men from universities, public schools, the professions and the civil service, banks, sportsmen, and the various 'Pals' battalions; men who possessed the equation of courage, morality and patriotism. These men suffered heavy casualties in the 1915-16 battles in France and Belgium, and were replaced in turn by conscripts. Consequently the 'will to combat' began to suffer in the battles that were ahead.

In the Second World War, the 'will to combat' was removed from the old-fashioned First World War battles as a personal problem in favour of a new concept of reliance upon the support of fighting vehicles, aircraft, and improved technology, which supported the infantryman in his will to combat. It, therefore, became less of a personal problem. Experience has shown that the qualities needed to sustain a soldier in battle are both moral and physical, involving courage, self-sacrifice and a regard for duty and loyalty to the regiment. Yet there were some men who lacked these qualities which played a vital rôle in their behaviour under battle conditions, and consequently became victims of fear. What is this fear?

It was in the Normandy bridgehead that Colonel Browne had the task of investigating cases of self-inflicted wounds in the British sector. Psychiatrists had landed with the assault troops on D-Day and the first corps exhaustion centre opened on D+8. By the third week of July, acute psychiatric battle casualties in the 21st Army Group had risen to 20 per cent of all casualties and, in the British Second Army alone, cases of what was then termed as 'Exhaustion' were running at 2,000 per week. Soldiers suffering from exhaustion were given an initial dose of sedative and evacuated to divisional exhaustion centres. There each case was re-examined and categorised. First, were those whose prognosis was poor; they were kept under sedation for 36-48 hours before further assessment. The second category were given two days' complete rest while the third had two or three days of rehabilitation under increasing military discipline before being returned for duty. Soldiers found guilty of actual desertion — around 60 per cent of all courts-martial — were sentenced from three to five years penal servitude. However, cases were reviewed after three months to give suitable men the chance of redeeming themselves by returning to a fighting unit. Of those men sent back to the front, only ten per cent failed a second time.

Unlike the more enlightened treatment accorded British deserters in the Second World War, the vast majority of offenders in the First World War were shot. Judge Anthony Babington first highlighted the extent in his book *For the Sake of Example* published in 1983, but it was not until 1989, when Julian Putkowski and Julian Sykes produced *Shot at Dawn* that actual names and details could be put to the 346 soldiers executed on the field of battle. Of these men, 268 were shot for desertion, a crime for which the death penalty was abolished in 1929. Although the true facts about how and why each man died had been withheld from the families concerned, and the records closed for 100 years, the authors discovered a War Office file which had accidentally been released in the Public Record Office summarising First World War capital courts-martial cases. Putkowski and Sykes considered that, excluding those executed for murder and mutiny, there were over 300 men who should be exonerated on the basis that they had not been accorded proper medical and/or legal aid at their field court-martial. The case for a free pardon was taken up by John Hipkin, who had served in the Merchant Navy in the Second World War, and he petitioned the Queen. The issue was supported by a private members bill by Andrew Mackinlay, MP for Thurrock, but this failed to get a second reading and the then-Prime Minister, John Major, decided that nothing could be done, explaining that 'I have reached the conclusion that we cannot re-write history by substituting our latter-day judgement for that of our contemporaries'. The United States still operated the death penalty for desertion in the Second World War, its most 'famous' case being that of Private Eddie Slovik *(right)*, executed by firing squad in France in January 1945 (see *After the Battle* No. 32).



THE IMPACT OF FEAR

The late Lord Moran in his book *The Anatomy of Courage* placed fear in four main categories:

(a) Men who did not feel fear;
(b) Men who felt fear but did not show it;
(c) Men who felt fear and showed it but did their job;
(d) Men who felt fear, showed it, and shirked their duty.

It is with this last category that this study is mainly concerned as the sense of fear under battle conditions found expression mainly in three ways, namely:

1. Self-inflicted wounding;
2. Cowardice and desertion;
3. Battle exhaustion.

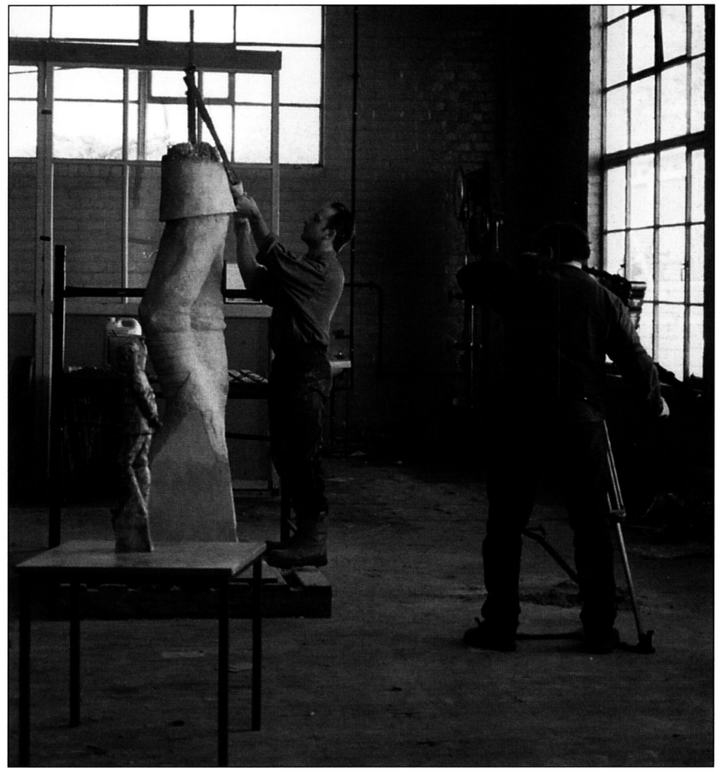
SELF-INFLICTED WOUNDING

In the First World War, some 3,882 cases of self-wounding were tried by court-martial. Details of self-woundings are not officially available for that war, but fuller information is available for the Second World War. The problem gave considerable concern at HQ, 21st Army Group, when the first reports of such occurrences came in, and an Army Order on the subject was published on August 23, 1944.

One of the requirements of this order was for a thorough investigation of each case coupled with careful preparation of the evidence. With my knowledge of courts-martial in the United Kingdom, I was appointed the officer to carry out such investigations. In order to help perform this task, all self-wounding cases were channelled through No. 110 British General Hospital, and I dealt with some 500 cases from over 365 units engaged in the Normandy bridgehead. The majority of these cases were committed for trial by court-martial, but there were some that were ruled by the Judge Advocate's Branch as being inadmissible for trial.

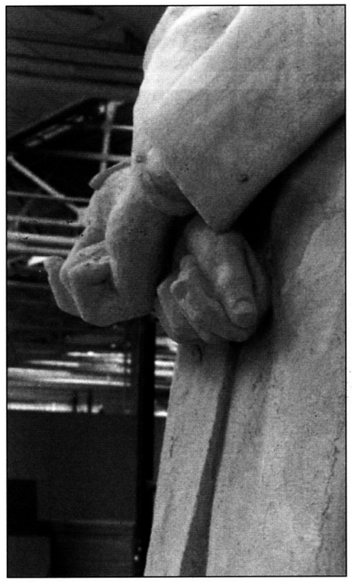
Investigations of the various cases found that the main causes of wounds were from captured German pistols and the faulty handling of British weapons. In some of these cases, the accused were soldiers and NCOs with long service records.

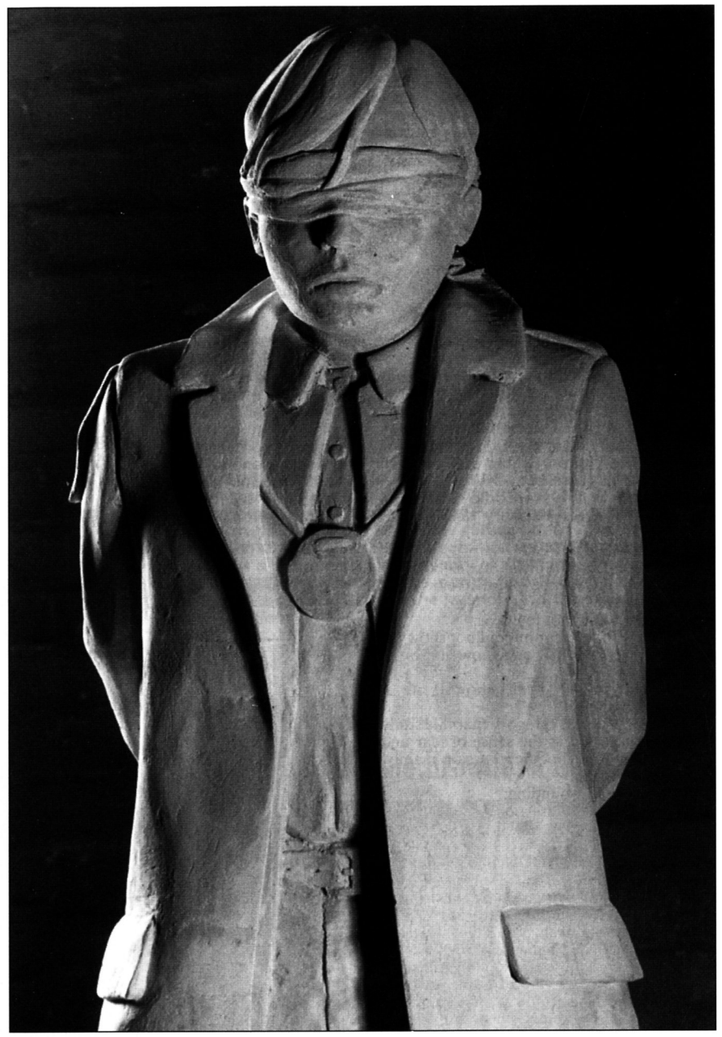
The persons charged with self-wounding were tried by court-martial under Section 18(2) of the Army Act (Wilful self-injury), or the lesser charge of 'negligent discharge of firearms' under Section 40. In those cases where the accused were found guilty, the sentence imposed varied from 1-2 years imprisonment with hard labour for the more serious and wilful cases, and for the lesser



Even if the Government had been so minded to agree to issue pardons, the Ministry of Defence explained that the records were too meagre to make a fair judgement as to whether there had been a miscarriage of justice. The MOD also stated that military records could not be altered — only added to. Although sympathetic in opposition, when elected in 1997 the Labour government reiterated the same view: that nothing could now be done. Nevertheless John Hipkin continued with his campaign, his view being similar to that of Lord Moran, a medical officer during the war, who said that 'a man's courage wears out in battle as his uniform does'. Sculptor Andy DeComyn first became aware of the executions on Remembrance Sunday 1999 when he watched a documentary on the work of John Hipkin. 'The programme highlighted the fact that these soldiers had not been commemorated in this country', writes Andy, 'and so it was with this in mind that I decided to construct a memorial for them. I contacted Mr Hipkin to find out what the relatives thought about the idea, especially as the image that I intended to portray was very emotive.'

'The design of the statue came to me immediately after seeing the documentary', Andy DeComyn told us, 'and it changed little from first design to completion, apart from the addition of a greatcoat. After gaining the blessing of the relatives I started to construct it, even though I had yet to find a location to erect it. I intended the image of the soldier to appear youthful and innocent. The buttons and insignia have been cut away, and his one epaulette hangs from his shoulder. Over his heart there is a disk for the firing squad to aim at, and his feet are struggling to be free of the block that traps him. With hands tied and eyes blindfolded, I wanted to capture the tension of the moment immediately before a young life was cruelly taken away. The statue took around six months to complete, from the initial maquette to the realisation of the statue, and was built on the premises of Kalamazoo International, who kindly let me use their space free of charge.'





offence of negligent discharge, the sentence would be up to a maximum of 90 days detention, or longer if found necessary.

With the advance from the bridgehead, there were a number of cases untried and some were either deferred or cancelled because of the difficulty in obtaining witnesses from the units because of casualties. In these cases, the army commander ordered that men whose medical condition allowed were to be sent forthwith for combatant or field duty, while those not fit for such duty were posted to non-combatant units.

MAIN FACTORS CONTRIBUTING TO THE PROBLEM

The question is posed as to what impelled a soldier to wound himself in this way, and I submit that the answer lies mainly in the conditions and environment under which he lived and fought.

In the First World War, the soldier generally lived in the trenches and his endurance to the stresses, dangers and privations experienced in this form of warfare was limited, resulting in the less hardy cases resorting to self-wounding. It has been said that on the eve of the Somme offensive in 1916, a number of soldiers from various units inflicted wounds on themselves to avoid having to 'jump the parapet' to attack, but the larger number of cases of self-wounding involved the discharge of a bullet from a rifle into the foot or hand, or faulty handling of a grenade detonator. Generally, the cases of self-wounding were distributed over a wide geographical region, and in the majority of units they were non-existent.

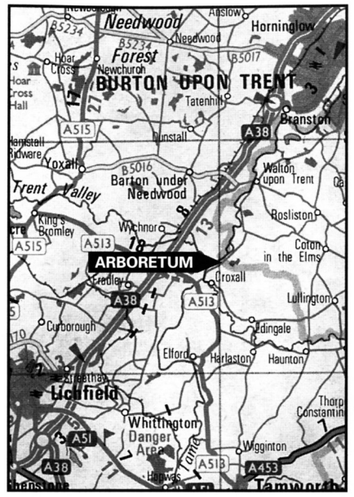
During the invasion of Normandy, the men were living and fighting in conditions which were considered by some senior officers as appalling and unparalleled in the annals of modern warfare. The British sector in the bridgehead measured roughly 25 miles long and 12 miles deep, and into this area were packed some 700,000 men, 150,000 vehicles and nearly one million tons of stores. The targets for the enemy were therefore very easy to find and the troops accordingly were under almost constant fire, causing heavy casualties and fear in the minds of the men. These conditions were endured for weeks on end and the troops began to feel that there was no hope of advancing out of it. Heavy casualties reduced the fighting will of many of the men, some of whom had come in as reinforcements. Faced with these exceptional conditions, many found there was no hope of escaping them except by inflicting a wound.

COWARDICE AND DESERTION

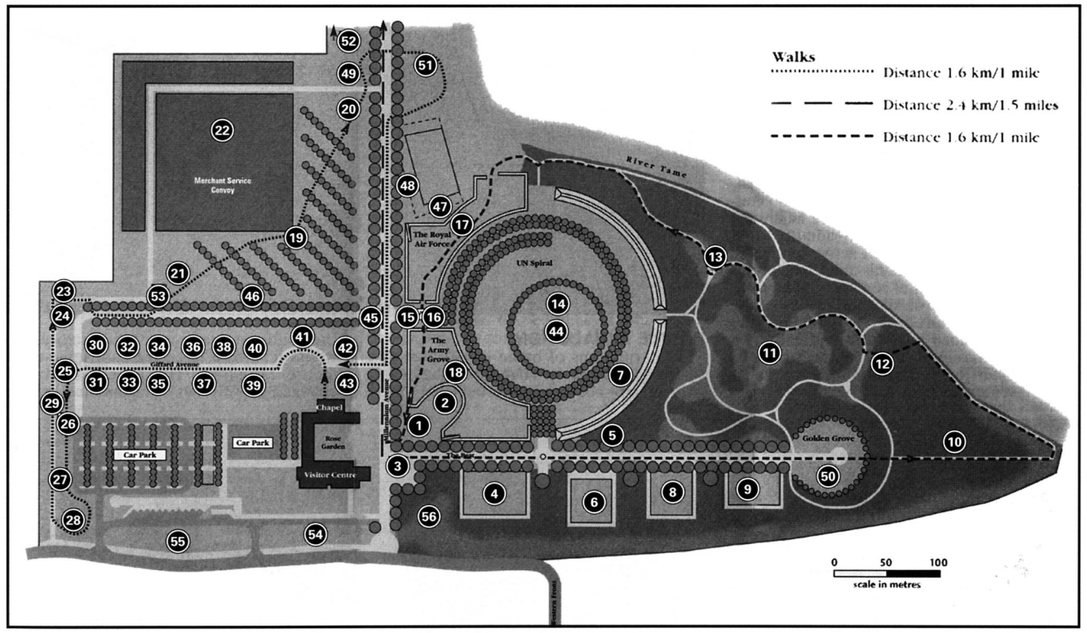
The question has been posed whether cowardice and desertion were the result of fear involving a lack of courage to enter into battle. In 1914-18, 7,500 cases of cowardice and desertion were tried and given minor sentences, but 18 cases ended in death sentences for cowardice and 268 for desertion. The offences occurred mainly during the 1915 battles of Neuve Chapelle, Second Ypres and Loos, and in 1916 to those of the Somme and the Ancre. In 1917, they occurred during the battles of Arras, Vimy Ridge, Third Ypres, Cambrai and Passchendaele.

In 1929 an Act of Parliament made the death sentence for cowardice and desertion inadmissible, and confined such a sentence for treachery and mutiny only. No details of the circumstances under which the acts of cowardice were committed thereafter is officially available, but the records show that the sentences passed by the courts-martial varied from periods of hard labour to ten years' penal servitude.

The difference between cowardice and desertion is not easy to define except to say that it can be attributed in many cases to a sense of fear and lack of courage. Lord Moran wrote in his book that 'courage was

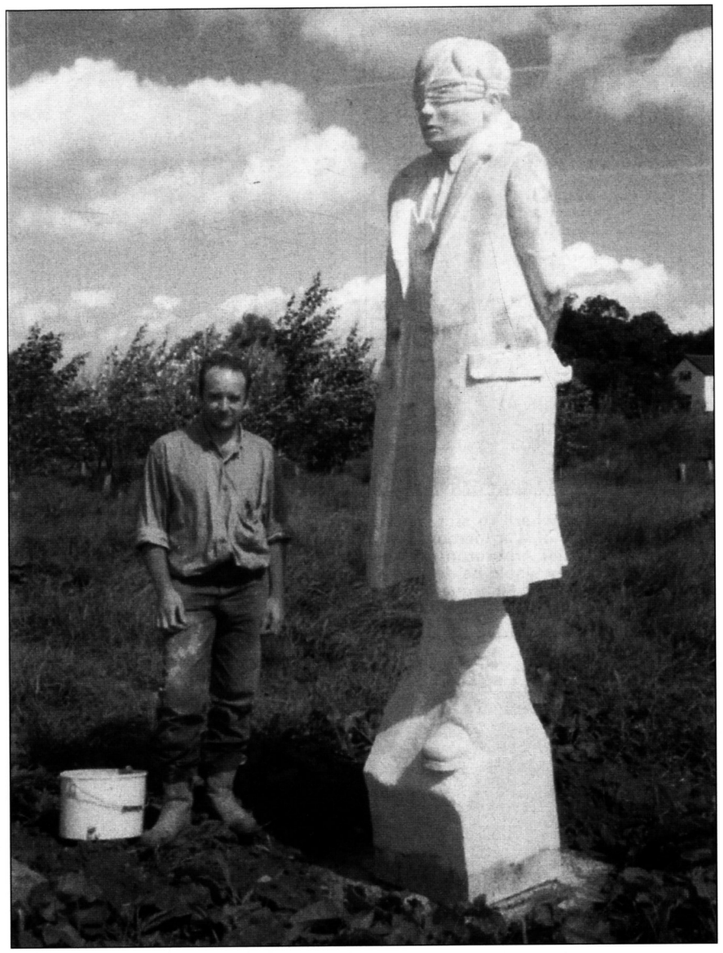


'The problem of where to site the memorial was remedied when the Friends of War Memorials put me in touch with the National Memorial Arboretum at Arewas, Burton-on-Trent, who said that they would be delighted to give it a home. Furthermore they offered 600 square metres of the arboretum for our use, and David Childs [the director] proposed the idea of the "Greek Theatre" of posts each individually dedicated. Although I donated the statue for free, there would be expenses to cover the posts and future maintenance. This I proposed to cover by the "adopt a soldier" appeal, where each post was adopted for £20 and, thanks to Jackie Fisher of the Arboretum, this was achieved.'



The National Memorial Aboretum is a Millenium Commission project supported by funds from the National Lottery and is being created on the 150-acre site as a living tribute to the wartime generations of the 20th century 'as a gift in their memory for future generations to reflect upon and enjoy'. Planting began in 1997 and plots and groves have been created for the armed and merchant services, the police, fire services, and many other groups and associations as well as individuals. The project includes the Millenium Chapel of Peace and Forgiveness which is the only place of worship built in Britain to celebrate the Millenium. [1] Polar Bear. [2] The Greek Campaigns. [3] The Police Memorial Garden and Beat. [4] The Mediterranean Campaigns. [5] Blues and Royals. [6] Royal Logistic Corps. [7] CWS Memorial Line. [8] Royal Tank Regiment. [9] The Irish Infantry Grove. [10] Royal Army Medical Corps & QARANC. [11] City of Lichfield. [12] Shot at Dawn. [13] Household Division. [14] The UN Spiral. [15] Adjutant General's Corps. [16] Staffordshire Regiment. [17] Royal Air Force Wing. [18] The Army Parade. [19] The Royal Naval Review. [20] The WRNS, QARNNS, VAD(RN). [21] Far East Air Force. [22] The Merchant Navy Convoy. [23] The Baluch. [24] The Dogras. [25] British Korean Veterans. [26] Far East Campaigns and POWs. [27] Royal British Legion Poppy Field. [28] Gallipoli. [29] Rotary Ridge. [30] Civil Defence. [31] WRAC. [32] Fire Service. [33] RAF Regiment. [34] SANDS. [35] ATS Ack Ack. [36] Inner Wheel. [37] The Royal Artillery. [38] BLESMA. [39] The Trefoil Guild. [40] RAF Halton Air Apprentices. [41] General Post office. [42] The 'Y' Group. [43] Lichfield District. [44] International Friendship. [45] Operation 'Market-Garden'. [46] Yeomanry Avenue. [47] RAF Servicing Commando. [48] Royal Observer Corps. [49] The Ulster Ash Grove. [50] The Golden Grove. [51] 'Wind in the Willows Wood'. [52] Roadpeace. [53] Royal Indian Navy and Army. [54] Normandy Veterans. [55] Dunkirk Veterans. [56] War Widows' Wood.

Andy explains that 'it was planned to have the memorial in place for July 21, 2000 which is the anniversary of the execution in 1915 of Herbert Burden, a 17-year-old Northumberland Fusilier. It was the under-age soldiers that inspired me most to carry out the project although I didn't intend it to represent any one of them. However, it is now established by others that the statue represents Private Burden.'



really the essence of "will-power", whereof no man has an unlimited stock, and when in war it is used up he is finished as a soldier'. One of the problems in the British Army on the Western Front in the First War was the limit of endurance by many men to the stresses, dangers and privations which they were experiencing in this form of warfare, and it is now known that many officers of all ranks had the opinion that only about one-third of their men were dependable in a battle situation. It must also not be forgotten that many of the offenders were young men who had led secluded and innocent lives in their civilian days and were for the first time thrown into the most savage horrors of war that shocked them.

The psychological and physical aspects of cowardice and desertion must be considered in a final analysis of the two crimes. Some battalion medical officers were of the opinion that some of the cases they examined showed genuine conditions of 'war neurosis' and should have received consideration before the death penalty was passed. The decision by Higher Command to enforce the death penalty was for generations a tradition of brutal punishment for the enforcement of military discipline in war and, despite discussions in Parliament for a change, it was the opinion of the military that the immense infusion of civilians, who were a mixed mass of non-professional soldiers, made rigorous control essential.

It might be thought that many of the sentences passed by the courts-martial and confirmed by Higher Command were harsh and arbitrary, but it was generally admitted that when a soldier deserted on active service he left a gap in the ranks of his unit to the prejudice of his more-dutiful comrades. If he committed an act of cowardice in the face of the enemy, he was probably jeopardising the safety of the men in his unit and causing a sense of panic among them, and these factors were taken into account when the court passed sentence.

BATTLE EXHAUSTION

The symptoms of battle exhaustion were totally ignored by the High Command before 1917 mainly because it was believed that, if the condition was recognised medically, it would lead to a large increase in so-called 'battle casualties'. However, this attitude changed in July 1917 and medical centres

Andy: 'The memorial is intended to be a simple commemoration of 306 victims of war, and a place where relatives can at last lay wreaths. By its nature it is political, but it is quite separate from the Shot at Dawn Pardon Campaign. That is not to say that I am against the pardons, just that the memorial is an impartial focal point for remembrance.'

The Shot at Dawn Memorial was unveiled by Gertie Harris who was three years old when her father, Private Harry Farr of the 1st Battalion, West Yorkshire Regiment, was executed on the Somme for cowardice on October 18, 1916. He had been evacuated from the front the previous year for five months suffering what was then referred to as 'shell-shock'. On September 14 he had fallen out of the line and reported sick. Ordered to return, he said that he felt unable to return to the front and was court-martialed on October 2. Every stake was sponsored by private subscription three times over and each bears the name of one of the executed soldiers. Gertie is pictured in front of the one that bears her father's name.

called the 'NYD (N) Centre' (Not Yet Diagnosed Nervous Cases) were set up. This came about after Higher Command received reports of increases in the number of men reported suffering from shell-shock, war neurosis, mental disorders and battle exhaustion. Several hundred cases passed through the centres up to the end of the war and many were passed fit for non-combatant duty only.

In the Second World War, as cases of battle exhaustion and sickness became a problem, it became necessary to open 'Exhaustion Centres' to deal with them. Unlike the First World War, by then psychiatry had reached advanced stages in its study and application and, consequently, the symptoms of mental stress, battle strain and exhaustion were more readily recognised by medical officers. No totals have been officially published for the British Army as a whole, but figures are available in one army corps and one division for the period spent in the Normandy bridgehead. In the army corps, the incidence of 'battle exhaustion' rose from 10 per cent in June 1944 to over 20 per cent in July and August, while in the particular division concerned, for their 41 days in the bridgehead, the figures showed 45 per cent sick and 14 per cent battle exhaustion, compared with 27 per cent wounded and 14 per cent killed.

THE REALITY OF HUMAN CONFLICT

Acts of self-wounding, cowardice, desertion and battle exhaustion must be regarded as a factum of war where hardships, stresses and danger are experienced by men in battle. War is a conflict of flesh, blood, fear and courage and not one of formulae and tactical concepts alone. Man is not normally experienced to deal with the conditions of war and, when faced with them, his mental and physical capacities undergo abnormal changes. Fear, courage, good discipline, boldness and fearlessness all play important parts in the behavioural pattern of a man in the hell of battle.

Not every soldier engaged in battle has the will to fight which is due largely to a sense of fear of being killed or wounded. Those men who possessed this 'will' were the dependable ones whose conduct was the basis of ultimate victory. These men in many instances showed brave and gallant acts in the heat of the battle, some of which were impossible to comprehend. Such men possessed something physically and mentally that inspired sacrificial effort and heroism in the conduct of the battle, which placed them in that special category of men who where the backbone of battle success.

The degree of fear in modern war has now been largely minimised by the introduction of tanks, troop-carrying armoured vehicles, increased fire-power weaponry and technology. In addition, the training now given on field firing ranges helps a soldier to accustom himself to the atmosphere and dangers of battle, a form of training which was absent prior to the two world wars.

Finally, it must be said in all fairness that it would be unjust to impose a censure on those who were responsible for passing severe sentences on those men guilty of serious forms of military indiscipline in the two world wars, inasmuch as such penalties were imposed for the sake of example and the maintenance of unit morale which was vital on the final road to victory.

'The memorial asks us to recognise these deaths as another of the tragedies that warfare has brought about', says the director of the Arboretum David Charles, right. With him are John Hipkin of the Shot at Dawn Pardon Campaign and Fred Bundy, 101 years old — an under-age seaman in WWI who also served in the Royal Navy during the Second World War.